INDIA'S SMALL SCALE INDUSTRY POLICY: AN EVALUATION AND A CASE STUDY

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ABSTRACT

This study examines the Indian Government's policy of supporting and promoting small manufacturing industry, whose aims stressed the generation of employment, the productive use of capital and skills, and the contribution small manufacturing can make to promoting regional and rural/urban balance. A less well publicised aim of the policy has been to create a sector which is viable and self-sustaining.

The study examines the growth of small manufacturing over the period 1961-1991, and finds that growth was conditioned more by the growth of the economy as a whole than by specific government policy for small manufacturing. Analysis at the All-India level reveals that the distribution of small industry was positively related to the level of urbanisation and industrialisation, while, at a smaller scale, within Tamil Nadu, the same results largely hold. Overall, there is no evidence that the growth of the small scale sector has reduced regional imbalances.

Examination of the viability of the small scale sector draws on research into the re-emergence of industrial districts of flexibly specialised small firms which emphasises that viability is dependent on the geographical agglomeration of small manufacturers, and the emergence of systems of informal and formal inter-firm cooperation through which they can collectively resolve their individual weaknesses and promote collective efficiency. A case study of small engineering units in Coimbatore sought to determine whether the Government's support services had acted as a model of public-private cooperation, and a catalyst to encourage cooperation between small firms, and with other agencies. The main finding was that the Government's support services were unsatisfactory. Small engineering units are flexible, adaptable, capable of accumulation and growth, but this dynamism co-exists with obsolete technology and poor quality standards. The explanation for this lies partly in the macro-policy environment, which has encouraged the growth of small manufacturing units, but has not provided either the incentive, or the support to pursue a path of technological innovation, compounded by the evident lack of trust and limited cooperation among small entrepreneurs, which is a major obstacle to the development of collective solutions to their problems.

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CHAPTER 1 AIMS AND METHODS OF THE STUDY

In 1954 the Government of India established the Small Scale Industries Board and in doing so inaugurated a policy of promoting small modern manufacturing industry. That policy, with its elaborate support system, has been in existence for sufficiently long to enable a considered evaluation of its achievements to be attempted. Such an assessment seems all the more apposite in the context of the major changes in India's domestic and foreign economic policy since 1991. The opening up of the Indian economy to the rest of the world poses a challenge to India's hitherto protected industrial economy, and raises questions about its future, and that of its small manufacturing sector, in a competitive global economy.

The broad aim of this dissertation is to provide a critical examination of aspects of India's small scale industry policy. In doing so, it comments both on the origins and the implementation of that policy, and attempts to provide an assessment of its substantive achievements. The Government set out its aims for the policy in the 1956 Industrial Policy Resolution:

> "The Government of India would... stress the role of cottage and village and small scale industries in the development of the national economy. In relation to some of the problems that need urgent solutions, they offer some distinct advantages. They provide immediate large scale employment: they offer a method of ensuring a more equitable distribution of the national income and they facilitate an effective mobilisation of resources of capital and skill which might otherwise remain unutilised. Some of the problems that unplanned urbanisation tends to create will be avoided by the establishment of small centres of industrial production all over the country" (GOI, Industrial Policy Resolution 1956: para. 13).

In essence the central claims were that small manufacturing industry would help to create much needed employment, make use of capital and skills, and help to promote regional balance while reducing disparities between city and countryside. The hopes attached to the growth of the small manufacturing sector have to be

seen in the broader context of India's post-Independence development strategy of heavy industrialisation. It was recognised by Mahalanobis, the architect of the Second Five Year Plan, and others, that the strategy would inevitably take time to reach maturity, and that heavy industry would inevitably tend to be capital intensive. In the meantime, the problems of underemployment and unemployment required urgent attention, and on that basis the policy of promoting small industry was largely justified (Mahalanobis, 1963). The aims of employment creation on the one hand, allied with the desire to create employment in rural and 'backward' areas through small industry promotion were reiterated in successive Industrial Policy statements, as well as in successive Five Year Plans.

A further general, but largely unremarked aspect of the policy was that:

> "..the aim of the State Policy will be to ensure that the decentralised sector (of cottage, village and small industries) acquires sufficient vitality to be self-supporting..... The State will, therefore, concentrate on measures designed to improve the competitive strength of the small-scale producers" (GOI, 1956: para 14).

This last aim of creating a viable small manufacturing sector is obviously vital. Security of employment and avoiding a drain on resources suggest that the promotion of small industry has to aim at creating a sector which is economically viable and 'self-supporting', rather than becoming an expensive form of social welfare. However, this important general aim of policy subsequently vanished from government policy pronouncements until the 1990s, when the aim was formally revived and re-emphasised. Thus the Finance Ministry's Economic Survey 1993/4 stated that:

> "The nature of Governments' assistance to the SSI (small scale industries) needs to be reviewed with the objective of making SSI self-sustaining.." (GOI, Ministry of Finance, 1994: 109)

These formal aims raise a number of questions:

1. How successful has the promotion of small modern manufacturing been in creating employment and absorbing labour?
2. To what extent is growth in the small scale sector attributable to the support system established by the Government?
3. What evidence is there that the growth of small manufacturing has alleviated spatial imbalances and contributed to industrial decentralisation?
4. Has the policy of promoting small manufacturing industry created a sector which is viable, 'self-supporting', and 'self-sustaining'?

There is today a substantial literature on small scale manufacturing in India, but much of it is descriptive and frequently uncritical, not least in its use of available statistics. Included in this category are two of the more useful general reviews by Kashyap, and Ramaswamy (Kashyap 1988; Ramaswamy 1994). A subset of the literature addresses the assumption that small scale manufacturing is labour intensive, and requires little in the way of capital (Little, Mazumdar and Page 1987; Bhavani 1991; Ramaswamy 1993), and specific aspects of Government policy have also come under critical review. Thus a number of studies have examined the industrial estates programme (Vepa 1988; Sandesara 1988), and the provision of credit for small manufacturers (Sandesara 1982; Patvardhan 1988) What these studies reveal is that policy has not been based on particularly firm foundations, inasmuch as small manufacturing has not been shown to be more labour intensive than large scale industry, and specific measures of government policy also suffer serious shortcomings, and indeed may have been counterproductive. While making use of these specific criticisms and perceived shortcomings of the policy, this dissertation started from a rather different perspective of trying to assess 1). the growth of the small scale sector over time and 2). its changing spatial distribution. The apparent marked tendency towards

the geographical concentration of small manufacturing raised the question 3). of how the geography of small industry is related to the issue of viability.

The connection between these apparently disparate issues can be traced back to the work of Alfred Marshall and Sargant Florence amongst others, who drew attention to the existence of thriving networks of small manufacturers (Marshall, 1961; Florence 1948, 1972). Their concern with "industrial districts" has recently been revived against the background of a resurgence of a small manufacturing sector in developed European economies, and the growth of small manufacturing firms in a number of Asian Pacific economies. This revival/rediscovery of the small scale manufacturing sector has prompted great deal of research effort, much of it focused on and stimulated by developments in Italy and Japan, with the aim of attempting to identify the conditions under which apparently successful small scale manufacturing has been possible. In this context, successful is not simply a matter of the profitability of individual small enterprises, but of their ability to survive in a highly competitive environment through increased productive investment. What this comparative approach suggests is that a viable programme of small scale manufacturing is dependent upon two sets of factors:

1. the clustering of small firms in geographical space. Sectoral clustering of related small units promotes specialisation by task and product, and brings about a greater division of labour among the constituent units within the cluster. The basic contention of the industrial district thesis is that such sectoral clusters can be as efficient a way of producing manufactured goods as the large integrated manufacturing firm. The difference is largely one of boundaries. The large integrated firm itself involves an internal division of labour into separate departments, with the whole process of production being carried out within the factory wall. A cluster of related small firms is different only in that the various

tasks are carried out in separate and formally independent units - or what might be described as a factory without walls.

2. while clustering is a necessary, it is not a sufficient condition for success. The second ingredient is the development of a locally-based collective support system which enables small firms to overcome their individual weaknesses, and the obstacles they face in successfully undergoing a process of accumulation and growth. Simply put, small firms throughout the world face a common set of difficulties as compared with large-scale units of production (Sengenberger and Pyke 1991). The latter, because of their size and the resources at their disposal are in a better position to be able to create markets for their products through advertising; they are better able to secure access to credit and to gather technical information enabling them to adapt and grow. In a word, large firms have the advantage of being able to control the external environment to a much greater degree than their small counterparts. Small firms are confronted, as individual units, with problems of securing credit, finding markets, and keeping abreast of technological development (Sandesara 1992: 133/34; Sengenberger and Pyke 1991). Clustering does not of itself provide a solution to these problems; indeed, it may exacerbate them by heightening inter-firm competition, and thereby reducing the prospects for accumulation and growth. However, by acting collectively to develop a support system, small firms can begin to redress these difficulties, and thereby compete with the large firm sector. Individual small firms may act together, for example, to create joint marketing ventures and credit unions, as well as exchanging technical information and working jointly to devise new production technologies. Such informal methods may be supplemented by the efforts of local or national agencies in the public and/or private sector to provide the kind of support that individual small units would be unable, or hard put, to provide for themselves. Such a system of informal and formal cooperation seems to be the basis for the success of small manufacturing enterprises in Italy.

In Japan, small firm success has followed a different route, with small firms allying themselves with large firms, through a system of 'relational contracting' in which small units are provided with more or less secure markets for their output while benefiting from technological transfers from large parent sponsors.

Cooperation, then, seems to be an essential hallmark of successful small firm networking, and high levels of inter-firm cooperation seem to be based on relations of high trust and reciprocity. Where the bonds of trust are strong, firms will have the confident expectation that suppliers will provide raw materials and components of an acceptable standard, and do so on time, while suppliers will in turn be able to anticipate prompt and full payment. And beyond that, where firms are able to count on the basic honesty, fairness and trustworthiness of others, they will be more prepared to invest in pooling and sharing information about market opportunities and technological developments, with the expectation that others will reciprocate. Trust reduces the risks of cheating and opportunism which may arise when small firms have to depend on others. Where the bonds of trust are weak, and opportunism, cheating and sharp practice prevail, the basis for effective voluntary cooperation is undermined, and in those circumstances, firms within a geographical cluster will tend to resemble the atomised competitors of economic theory.

The complex question of how trust arises is dealt with more fully in chapter 2. The argument to be examined here is that public policy can act as a social catalyst in the development of inter-firm cooperation. The Government of India has established an impressive array of support services for small firms, providing them with raw materials, cheap credit, technical advice and support, marketing information and outlets in the public sector, and also encouraging subcontracting arrangements between large and small scale units. Through such measures, public policy may reduce the risks that small firms face in their business dealings, and

limit the scope for opportunism and cheating. At the same time, by providing high quality support which directly addresses the needs of small firms, state action demonstrates in a very practical way what can be achieved through cooperation and collaboration, encouraging imitative behaviour by other public and private sector organisations, and by individual firms. Public policy may thus stimulate the development of closer voluntary partnerships and promote closer and effective networking..

What emerges from this comparative perspective are certain important themes which underlie and inform this dissertation. The first is that of the significance of the sectoral clustering of a critical mass of small firms in geographical space. Clustering, it is suggested, is a necessary condition for the development of viable and self-sustaining small manufacturing development. However, the literature also suggests that for expanded reproduction to occur, i.e. for small firms to be able to adapt to competition, there must be a cooperative support system - either in the form of close and reciprocal relationships between small and large firms, as in Japan; or in the form of an informal system of interfirm cooperation, overlain by a more formal system in which public and private organisations provide support for small firms, as in Italy. It is through such supportive, collaborative mechanisms that the weaknesses and vulnerabilities of individual small firms can be mitigated, enabling them to accumulate and grow.

In trying to use these insights into successful small scale industrialisation, and apply them to analysing small manufacturing in India, it is important to bear in mind that macro-economic conditions in India are significantly different from those pertaining in both Italy and Japan. Both Italy and Japan are fully integrated into a competitive world economy, and the literature suggests how, in those circumstances, small manufacturers are able to thrive. India, by contrast, has been a virtually closed economy for the last four decades, and its manufacturing sector

has been spared the need to adapt to fierce international competition. Moreover, India has been a slowly and unevenly developing economy, where access to credit and to basic raw materials is more problematical. What effects such particularities create - either in holding back the growth of the small scale sector, or in fostering closer co-operation as a means of overcoming them - is a matter for empirical investigation.

Aims

The broad aim of this thesis is to provide an evaluation of the Government of India's policy for promoting small scale manufacturing industry, and to do so by considering three elements of that policy:

1. to assess the growth of the small manufacturing sector over time with a view to establishing the relative importance of government policy and the contribution of macro-economic factors
2. to examine the geographical distribution of small industry in India, so as to be able to assess the Government's contention that the growth of small industry will help to alleviate both inter-regional and rural-urban imbalances in levels of development
3. to examine the role of the Government's support system for small scale manufacturing in creating dynamic industrial districts, in which networks of small firms are able to accumulate and grow.

The arguments

1. A recurrent claim in the literature about small manufacturing industry in India is that there has been substantial growth in the number of units, and of employment. Such claims may be justified, but there is little justification for the uncritical use of flawed statistics. Moreover, there is little discussion in the literature of how and why such growth as is observed, has taken place. Thus both Kashyap and Ramaswamy claim to address the question of growth, but beyond

offering some (selective) statistics, they fail to offer any real examination of the dynamics of growth (Kashyap 1988; Ramaswamy 1994). Where an attempt is proffered, growth is bracketed together with references to Government policy, with the implicit claim that the former is attributable to the existence of the latter (e.g. Bhattacharya 1988).

The argument examined in this thesis is that macro-economic conditions within India have been more significant than Government small scale industry policy in influencing the development of the small manufacturing sector. At first sight this might appear to contradict the emphasis given above to the importance of external support in sustaining small manufacturers. However, the emphasis in the Italian and Japanese literature is on the effectiveness of **local** support systems, and at least by implication, the ineffectiveness and insensitivity of bureaucratically-controlled national systems of support.

It can be argued that certain broad features of the Indian economy have tended to favour the growth of small manufacturing; in particular, the sheer size of the country together with high transport costs may have enabled small firms to protect themselves from competition from the large scale sector by carving out local markets, while at the same time benefiting from the heavily inward orientation of the economy. Those favourable factors have to be balanced against the less favourable elements of the macro-economy, namely, the slow growth of the economy, particularly between 1965 and the late 1970s, depressing demand and creating serious raw material shortages, both of which are hypothesised to have been a drag on the growth of small manufacturing. By comparison, the 1980s have been a period of faster growth in the Indian economy generally, with growing output from basic industries and rising consumer expenditure. We would expect a faster rate of growth of small firms under these more favourable circumstances, and this leads to the first hypothesis: that changing macro-economic circumstances

have had a significant effect on the temporal growth of small manufacturing industry in India. In putting this hypothesis forward, an attempt is made to provide an explanation for the growth of the small scale sector, an issue which has not been given much serious consideration. In part, this lacuna arises because of problems of data availability. Indeed, testing this hypothesis in other than crude terms of comparing inter-censal growth rates with general economic growth rates is ruled out by the lack of available and reliable data on the growth of small manufacturing industry.

2. The second argument running through this dissertation relates to the geography of small manufacturing in India. One of the aims of the Government of India's policy for small industry was the based on the simplistic belief that small industry is essentially 'footloose' and could more easily than large-scale industry, be decentralised to reduce regional economic imbalances as well as the imbalance in employment opportunities between the city and the countryside. This is highly questionable. As noted above, there is a marked tendency for small firms to concentrate spatially, for sound economic reasons. And in a country as unevenly developed as India, that tendency is likely to be even more pronounced. Specifically, it is argued here that small manufacturing will tend to be highly concentrated geographically in the more developed parts of the Union, where infrastructure and external economies are readily available. In practice, this means that small manufacturing is likely to be heavily concentrated into India's more urbanised areas. This hypothesis is tested by examining changes in the distribution of small manufacturing for the major states of the Union over the period 1961 - 1991, and through an analysis of the changing distribution of small manufacturing at District level within the state of Tamil Nadu over the period 1961 - 1981.

The study of the geography of small manufacturing is a further area that has been neglected in the literature. There are a large number of studies of India's industrial

geography, and the dynamics of regional convergence/divergence. Such studies focus exclusively on medium and large-scale manufacturing, using data from the Annual Survey of Industries (e.g. Bannerjee and Ghosh 1988; Kundu and Raza 1982; Dholakia 1985, 1989, 1994; Seth 1986; Sarker 1994; Tewari 1988). By comparison, the geography of the small manufacturing sector has been neglected, principally because of the difficulties of creating an appropriate database.

3. The third strand of the argument relates to the role and effectiveness of public policy in promoting inter-firm trust and cooperation. Reciprocal cooperation is seen to be the hallmark of the industrial district, and the essential basis for successful small firm industrialisation. While there are divergent interpretations of how trust arises, the proposition examined here is that an effective system of public support for small manufacturers can help to promote trust and cooperation between firms. A well designed, and accessible programme of support which addresses the real concerns of small firms and provides them with tangible benefits can provide a convincing demonstration of the gains to be made from collaboration and collective action, spurring individual firms to emulate that example. The task of encouraging cooperation might be made easier where there already exists a degree of trust among entrepreneurs, as may be evident in informal methods of cooperation such the existence of credit unions or joint marketing operations. Conversely, it may be more difficult to persuade firms of the benefits of cooperation where mistrust and suspicion - including suspicion of the state- prevails. But arguably, even in the latter case, well-directed and relevant support by public agencies may help reduce suspicion and promote a greater willingness to recognise the benefits of collective action.

The role of the state in stimulating the development of industrial networks is considered by referring to a case study of small firms in the city of Coimbatore, and specifically in the engineering industry. No claim is made that either

Coimbatore, or the engineering sector is in any sense 'representative'. The very heterogeneity of the small scale sector makes generalisation unwise. The approach adopted here is to examine a particular sector in a particular locality, while recognising the limitations of such an approach. Drawing on the analytical framework developed out of the Italian/Japanese examples, we attempt to assess whether this local concentration of engineering firms has developed the characteristics of the self-sustaining industrial district. The investigation involved interviews with small entrepreneurs to establish the linkages that exist between small and large firms, their degree of dynamism, and an examination of their use and perception of the formal support system provided by the state. The broad hypothesis was that successful state intervention to promote cooperation depends, firstly, on the effectiveness and quality of the state's support programme; and secondly on the level of trust that exists among small entrepreneurs. While the latter is difficult to measure empirically, it can be gauged by levels of informal cooperation between small firms.

There are a number of studies of localised concentrations of small industries, and these are reviewed later. Suffice it to say that these have adopted a very different perspective from that used here. In particular, examination of the support system for small industry has been neglected. As pointed out above, there are a number of studies of industrial estates and their utilisation, and access to credit. But there have been few studies of the effectiveness of Government technical and marketing assistance, and the issue of how local institutions interface with the small scale sector has aroused little attention.

Data and Methods.

In examining the growth and the geography of small manufacturing, this dissertation has of necessity made great use of secondary published statistical

sources. There are a number of different sources of statistical data relating to the small scale sector. The main sources comprise

- statistics collated by the Small Industries Development Organisation on 'registered' small scale manufacturing units
- National Accounts statistics
- the Census of Population
- the Annual Survey of Industries

Each of these sources has its own definition of 'small' industry, either in terms of investment or employment levels. Each of these sources has its particular deficiencies and drawbacks, particularly in relation to coverage and reliability A critical examination of these sources led us to make use of a combination of the Census of Population, and the Annual Survey of Industries as providing the least unreliable and most comprehensive data. The Annual Survey of Industries is a comprehensive digest of statistics relating to medium and large scale industries registered under the 1948 Factory Act and covers all factory establishments with more than 10 workers using powered machinery, and more than 20 workers where no powered machinery is employed. The Census of Population includes data relating to employment in household industry - essentially village and cottage industries, where manufacture takes place on domestic premises - and non-household industries. By subtracting employment in the organised factory sector from employment in the Census non-household category, we can identify employment in the small scale sector, defined as units employing fewer than 10 workers, and fewer than 20 where no power is used. This is the data used in analysing the geography of small manufacturing. A breakdown of the Annual Survey of Industries data allows the definition of 'small' to be extended to include units employing up to 49 workers, where power is employed and up to 99 workers where no power is used. This more useful definition could not be used in

examining the geography of small manufacturing, because the data is available only at the All-India level, and is not published for the individual states, let alone districts within the states.

While the combination of Census data, and data from the Annual Survey of Industries seems to be the most reliable method of identifying employment in small industry, the principal drawback is that, rather than an annual time series, we get a series of snapshots of the size of the small manufacturing sector at ten-yearly intervals. This is not a major drawback in considering the changing geography of the sector, but it does pose problems in trying to relate the temporal growth of the small scale sector to changing macroeconomic conditions, principally that the Census dates do not neatly correspond with important turning points in India's recent economic history.

Of necessity, the case study of Coimbatore's engineering industries makes use of questionnaire data, collected in the field during August/September 1993. The survey was supplemented by interviews undertaken in December/January 1993/4, with a variety of individuals involved in a number of organisations which have some connection with local industry, as a means of assessing their contribution to assisting small firms. A total of six visits was made to Tamil Nadu between the beginning of this research in 1989, and 1995. Two visits were made to Coimbatore prior to the fieldwork surveys.

The questionnaire

The questionnaire survey of small engineering units was designed to achieve several things. It sought first to obtain information on the main characteristics of small engineering firms - the characteristics of their owners, their employees and the process of production. A second aim was to examine the relationship between small engineering units and other economic actors, in particular, their relationships

with medium and large firms in the city, with other small firms and with traders. The third area of concern was with the experience of growth; to what extent had small firms expanded their labour force and/or their level of investment in plant and machinery, and in what other ways was there evidence of firms' ability to adapt. Finally, an attempt was made to gather information about small firms' use and perception of those services provided by Government and the extent to which small firms had developed their own informal collective support system. A copy of the interview schedule is included as Appendix 1.

The difficulties of field survey

The sample survey is an indispensable tool for gathering the kind of information outlined above, but conducting a rigorous survey poses more than a few challenges. The first hurdle was the selection of a sample of units to be surveyed. The major problem is that there is no comprehensive record of all small manufacturing units for Coimbatore - nor indeed for any other town or city in India. The only available listing of small manufacturing units takes the form of the State Directory of Small Industries which lists all registered small units classified according to the National Industrial Classification. However the Directory records only those small units (defined as having investment levels below a certain ceiling) which choose to register with the State Directorate of Industries and Commerce. As such, the register is not a complete record of all small manufacturing units. Moreover, it is a rolling record, and includes all units that have ever registered, including those that have moved, as well as those which have ceased trading. An indication of the magnitude of over-registration can be gleaned from comparing the data from the Directory with that collected during the Second All-India Census of Small Scale Manufacturing. The latest - fourth - edition of the State Directory lists 88,442 small units registered up to the end of 1987. The Second All-India Census organised by the Small Industries Development Organisation used the Directory as its basic frame of reference, but was able to verify the

existence of only 57,213 units on the register. In Coimbatore District, there are some 13,000 registered units according to the Directory, compared with only 7214 functioning units identified by the Census. Clearly, the sample design had to take account of this high level of over-registration.

In spite of its questionable coverage, the Directory was perforce the main sample framework. The Directory lists units by District, and by sector, using the National Industrial classification. Using postal codes, a total of some 2900 small engineering units could be identified within the Coimbatore Metropolitan area. This procedure indicated a very uneven distribution of units by postcode within the city, with the highest concentrations in two areas; Ganapathi with the highest concentration of some 550 units, and Peelamedu with some 300. Of these two areas, Peelamedu postal district turned out to cover a large area to the east of the city centre, while Ganapathi was a smaller area, with a denser concentration of small units, together with a number of medium and large factories in the textile and engineering sectors. Ganapathi was selected for the field survey, and a systematic stratified sample of units was chosen from the Directory, with the number of chosen units being proportional to the total number of units in each of the industrial groups comprising the engineering sector (groups 34 - 37 inclusive). A total of 136 units was chosen to allow for moves and closures, and this work was undertaken prior to the fieldwork proper. In order to include data about non-registered units, there was little option but to resort to a rough rule-of-thumb, that for every four registered units, the nearest non-registered unit in the same street would be sampled. In the event, questionnaire data was collected for a total of 91 units, of which

- 56 were registered small units

- 10 were registered both as small units, as well as under the Factory Act

- 25 were unregistered small scale units.

It cannot, of course, be claimed that the results are based on a representative sample of small engineering units. Indeed it is impossible to state just how many such units there are in the city.

The fieldwork was carried out with the assistance of graduate students from the Agricultural University, Coimbatore. The use of graduate helpers was necessary, partly because of time constraints, but also because of anticipated language difficulties. It could not be assumed that the owners of small manufacturing units would necessarily be fluent in English, so the assistance of fluent English/Tamil speakers was sought. Professor Gothandapani of the Agricultural University provided access to postgraduate students with some experience of conducting field surveys. Altogether, six students helped with the interviewing at various times. All were briefed on the purpose of the survey, and the rationale for the specific questions in the schedule. At the end of each day, the questionnaires were checked for completeness.

A further difficulty in undertaking the fieldwork was that of identifying the location of the sample units on the ground. The problem lay in the lack of a map detailing the street layout in the chosen area of Ganapathi. While there are a number of tourist maps of the city, these are neither comprehensive, nor entirely reliable. Commonly, these maps record the street pattern around the city centre, but in outlying areas, such as Ganapathi, only the main routes into and out of the city are recorded. In the absence of a suitable map, progress in locating the sample units was frustratingly slow in the early stages; and that frustration was compounded when particular units turned out either not to have existed at all, to have died, or to have been misclassified in the Directory. Interestingly, none of the units was found to have moved. On a more positive note, very few of the

proprietors approached for help in completing the questionnaire declined to participate; on the contrary, most were only too happy to take part - often at great length - once they had been reassured that there was no government involvement.

The support system for small engineering industry

In addition to the questionnaire survey of small engineering units, a further set of interviews was conducted with a range of government and non-governmental agencies with some relationship to the small manufacturing sector. There are certain obvious choices, and these include the District Industries Centre and the Small Industries Development Organisation, which are the main government agencies directly responsible for small industry promotion. CODISSIA, the Coimbatore and District Small Scale Industries Association, a voluntary self-help group, was a further obvious choice. Contacts among the business/industrial, and the academic community in Coimbatore suggested a number of other potentially interested agencies. In addition, the feedback from the questionnaires indicated the range of problems as perceived by small industrialists, and their perceptions also influenced the choice of agencies to be contacted. These interviews were largely unstructured, designed to uncover ways in which these organisations interface with small engineering units. Contacts in Coimbatore gave access to a number of owners and works managers in the large firm sector, and their views, while not rigorously recorded, also fed into the field survey.

Organisation of the dissertation

The dissertation is organised as follows:

Chapter 2 contains the main analytical framework of the study. This chapter examines the role of small industry in the modern economy, and focuses on small manufacturing in Italy and Japan. These are both instances of the successful growth of small manufacturing industry, and their experience suggests that there

are important pre-conditions for the development of a viable small industrial sector. Underlying this discussion is the view that a comparative perspective is useful in raising questions that have previously been ignored, neglected, or insufficiently explored.

Chapter 3 explores the origins of India's small industry policy, and its place in the country's post-Independence development strategy. The chapter includes an overview of the various policy measures implemented by the Government of India to support and promote the growth of the small scale manufacturing sector.

Chapter 4 examines the growth of small manufacturing enterprise. This chapter includes a critical examination of the main sources of data relating to the small scale sector. It assesses the growth of employment in the small scale sector relative to the large scale sector, and considers some of the criticisms that have been levelled at Government small industry policy in relation to employment creation.

Chapter 5 briefly reviews macro-economic changes in India in the period since the mid-fifties, as a prelude to Chapter 6, which attempts to relate the growth of the small scale sector to changing macro-economic conditions.

Chapter 7 is an examination of the geography of small scale industry. It examines changes in the distribution of small manufacturing at the All-India level between 1961 and 1991, and this is followed by an examination of changes in the distribution of small industry in Tamil Nadu for the period 1961 - 1981.

Chapters 8, 9 and 10 present the results of the survey of small engineering units in the Coimbatore metropolitan area. Chapter 11 provides a summary and some general conclusions.

CHAPTER 2. SMALL SCALE MANUFACTURING IN A MODERN WORLD

In the postwar period, development has come to be synonymous with industrialisation. For most of the countries of Africa, Asia and Latin America, industrialisation and the growth of a modern manufacturing sector has been seen as the means of diversifying the economic base and reducing dependence on a narrow range of primary export commodities which exposes them to the vagaries of an uncertain world market. Industrialisation held out the promise of creating additional sources of wealth and employment, stimulating agricultural production, and raising output and income across the economy. Industrialisation is desired not only because it is seen as the necessary means of raising material living standards, but also because of the political and military power that industrialisation is seen to bestow (Sen 1984). Just as the major Western countries have acquired economic, political and military strength through industrial development, so for many governments in the Third World, the ability to exercise their sovereignty after years of colonial rule is seen to require an economic transformation. For economic and political reasons, industrialisation has been and continues to be a major priority for many Third World states (Gwynne 1990). Of course, as Kitching points out, there have long been minority oppositional currents to this orthodoxy (Kitching 1982:10). Today's anti-development discourse is part of a larger populist tradition, extending back into the nineteenth century, which questions and rejects capitalist industrialisation for its attendant social and economic dislocation.

The orthodoxy however, persists. The progressive 'global shift' of manufacturing, the continued growth of the Newly Industrialised Countries of the Pacific Rim, and economic retrogression among (especially African) primary commodity exporters have combined to reinforce the conviction that not only is industrial

development desirable, but is more easily attainable in the changing circumstances of the late twentieth century (Wood 1994; Wield, Johnson and Hewitt 1992, ch 11).

While there is broad agreement about the desirability of industrialisation - agreement that spans the political spectrum - there has been ample scope for vigorous debate about means. In the 1960s and 1970s, there was, for example, much debate about the relative weight to be accorded to investment in industry as opposed to agriculture. Against the background of the resurgence of liberal neo-classical ideas in the West from the 1970s onwards, the debate has shifted to the merits of inward and outward looking development strategies, and state-centred versus market-friendly approaches (Toye 1993).

There has also been a long running debate over the issue of whether to emphasise the development of large scale heavy as opposed to small scale light industries. As a broad generalisation, priority has been given to developing industry that is "large-scale, capital intensive and urban based " (Colman and Nixson 1978: 179). This is not to say that the promotion of small scale industry has been entirely ignored. A number of Latin American governments - Mexico, Venezuela and Argentina - introduced specific programmes of financial support for small industry in the 1950s, extending to Brazil, Colombia and Chile in the 1960s (Uribe-Echevarria 1991). Among Asian countries, India from the mid 1950s onwards formulated an elaborate programme to develop modern small manufacturing, while in China small scale rural industrialisation was a feature of its development programmes. Other Asian countries, including Indonesia, Malaysia, and Philippines devised their own promotional programmes in the 1960s (Tan Thiam Soon 1983: 218), and in Africa, similar policies were adopted in Kenya, Tanzania, Ghana, Ivory Coast and Sudan (Neck 1983: 260). Such policies are implemented

on a variety of grounds to serve a variety of stated objectives, including the creation of employment, better use of factor endowments, the promotion of regional development and rural welfare, the promotion of entrepreneurship, and the democratisation of ownership. A measure of approval for these national policies has come from a number of important international agencies such as the World Bank, the International Labour Organisation and the UN Industrial Development Organisation, but it cannot be said that either national governments or international agencies have been ardent promoters of small manufacturing enterprise.

The experience of small enterprises in many countries, even those with a supportive policy, is that macro-economic policies tend to be biased against small -scale, and in favour of large scale enterprises (Little, Mazumdar and Page 1987: chapter 1: Dawson 1990; Fitzgerald 1990; Tambunan 1991: Meier and Pilgrim 1994). Meier and Pilgrim's examination of Nepal, Bangladesh and the Philippines leads them to argue that distorted and overregulated markets favour large units. With a restrictive import policy, large firms enjoy easier access to licences for imported raw materials and machinery; easier access to credit, crowding out funds for the small scale sector; and easier access to public sector procurement, where contracts depend on 'influence, nepotism and red tape' (Meier and Pilgrim 1994 :36). Their conclusion is that

> "policy-induced constraints on SSE (small scale enterprise) may reduce or even offset the positive effect of the prevailing direct assistance to the sector" (Meier and Pilgrim 1994: 37).

The implication that liberalisation will remove these biases is disputed by Fitgerald, who argues that large scale industry has an inherent superiority, which enables it

to set price levels and monopolise sources of credit to the disadvantage of small units (Fitzgerald 1990: 397).

The essential point to emphasise is that there is evidence of a disjunction between macro-economic policy and policy towards the small scale sector, reflecting the essential ambiguity of small industry policies. Rarely are they fully integrated into overall development strategies. This ambiguity seems to be based on a particular interpretation of the way that the process of industrialisation unfolds, or should unfold, and this rests on a schematic model of the Industrial Revolution in the West and more specifically in Britain.

The Industrial Revolution marks the emergence of modern manufacturing, at the expense of precapitalist craft and household forms of production. In the nineteenth century much of this manufacturing capacity took the form of relatively modest enterprises, which formed the basis of Marx's analysis of competitive capitalism, (and seems to inform a resurgent neo-classical economic thinking). Over time with the growing division of labour, and the growth of markets for commodities, the number of firms increases (Fig 1.1). The result is that the competitive pressures on small manufacturers also increase, and are further intensified by improvements in transport reducing the ability of small manufacturers to shelter in protected local markets (Anderson 1982). Together these factors encourage a progressive restructuring of the manufacturing sector. Mergers, take-overs and bankruptcies lead to the growing concentration and centralisation of capital into a smaller number of large firms, characteristic of the modern economy. In short, what this evolutionary model suggests is that small scale manufacturing is characteristic of a transitional phase in the development from pre-capitalist to a developed capitalist economy. Inevitably small manufacturers are destined to disappear like the handicraft industries before them.

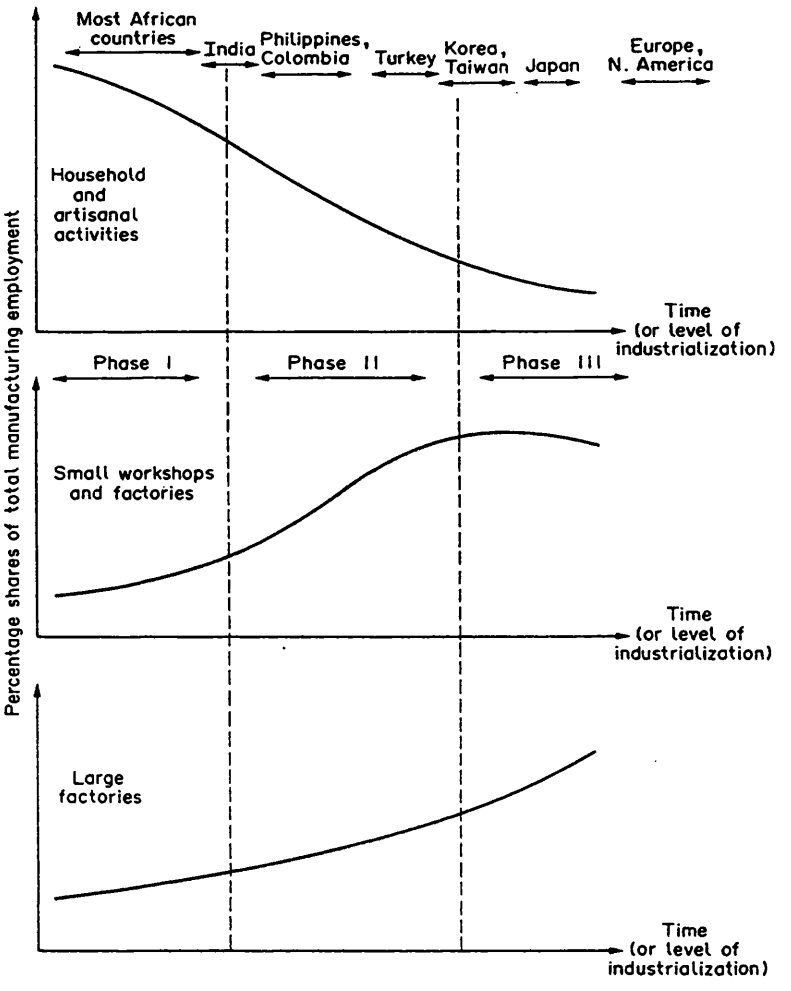

FIGURE 2.1 Changes in the size structure of industry over time
(Source: Anderson, 1982)

That some such evolutionary change did occur in Britain's experience over the last hundred years is not seriously disputed. The Bolton Committee of Inquiry on Small Firms revealed the steadily declining importance of small firms in British manufacturing over the period 1930 until the early 1960s (Davies and Kelly 1972:10). A similar continuous decline in the importance of the small manufacturing sector was recorded for the USA, Germany, Sweden, France and Italy (Storey 1983). Such empirical studies lend credence to an evolutionary interpretation of the industrialisation process in which small firms play a declining role as economic development progresses, being displaced by large scale enterprises which embody progress. On the basis of this interpretation, "small

firms (have) attracted much less attention from social scientists and policy makers than large firms" (Mason and Harrison 1990: 72). And what was true of the developed world also applied to policy makers in the Third World and among the international development agencies. Where small firms have been promoted in Asia, Africa and Latin America it has been as much if not more for essentially welfare objectives, rather than because of a positive belief in their viability and the contribution they can make to the process of development.

As it happens, this evolutionary model now turns out to be far more stylised than the real world itself. For while the Bolton Committee in the UK was lamenting the progressive and seemingly terminal decay of the small manufacturing firm, what came to be known as the Birch Report was claiming that most of the new jobs in the USA were being created by small firms (Birch 1979). At a time of growing economic turbulence and generally rising unemployment this finding stimulated a resurgence of interest in the small firm sector. While the focus of this interest lay primarily in Western Europe and the USA, a significant research effort was also directed to promoting an understanding of the sources of economic success in the Far East. The rediscovery of the Japanese "dual economy" and the contribution of small firms in the industrial development of South Korea, Taiwan and Hong Kong all suggested that the small firm had been prematurely written off. The challenge was to explain how small manufacturing firms were able to survive and indeed grow as other than a residual element in the industrial structure. What has emerged is a potentially fruitful framework which suggests that under certain conditions a process of industrialisation founded on small firms is economically viable.

In turn, this framework also poses a challenge to simple evolutionary ideas. The relatively new field of institutional economics takes issue with the assumption that

in a competitive environment, evolution leads to greater efficiency and "the selection of relatively superior or near optimal organisational forms" (Hodgson 1993: 199). Arthur, for example, points to the way that with competing technologies, 'path dependency' - or historical contingency - may lead an economy to be 'locked in' to an inferior technology (Arthur 1989). Likewise, Hodgson writes that

> ".. path dependency suggests that the development of the factory system and the modern capitalist firm is not simply a question of the evolutionary selection of the most efficient organisational configurations. ... the possibility of path dependency suggests that alternative less hierarchical or less regimented forms of organisation could have been just as viable. (Hodgson 1993: 204/5).

The apparent resurgence of small scale industry lends support to the view that there are indeed a number of different possible pathways to industrialisation.

Changing perspectives on Small Manufacturing

One of the problems in any study of the small manufacturing enterprise is the lack of a rigorous and coherent framework from which to approach the subject. The literature on small firms tends to be either entirely descriptive, simply recording the growth in numbers of small enterprises, or it adopts a programmatic perspective, setting out why small scale industrialisation is important and what action governments should take to promote it. A more analytical approach is evident in those studies which seek to assess the viability of small enterprises. Included in this category is the recent volume by Little, Mazumdar and Page, which focuses on the question of the efficiency of resource use by small firms as compared with medium and large enterprises (Little, Mazumdar and Page, 1987). While an important contribution to debunking some of the mythology surrounding small enterprises, the study also exhibits some of the weaknesses of the

economists' approach in which small firms are viewed through the prism of neo-classical economic theory, with individual firms confronting each other in an impersonal marketplace. Such an approach is not without merit, but it is restrictive.

A different approach, popular in the 1970s, was associated with the concept of the informal sector. Originating in Hart's analysis of the labour market in Accra, Ghana, a formal sector of relatively large, capitalist enterprises was distinguished from an informal sector of small and micro activities, ranging from small scale manufacturing, to forms of retailing and distribution (Hart 1973). Hart's emphasis on the productive and income generating characteristics of the informal sector was taken up by the International Labour Organisation as part of its World Employment Programme, and through a number of case studies, conducted under the auspices of personnel at the Institute of Development Studies at Brighton, it popularised the notion, launching it "into its meteoric career" (Peattie 1987: 853). The criticisms of the informal sector concept are well-known, and comment is restricted to two points (Moser 1978; Peattie 1987). First, the concept is extremely fuzzy and difficult to pin down with any clarity. In common with other dualistic models, the approach demarcates one sector of the economy - the large scale, 'modern' sector, relegating all other activities to a category of 'informal activities'. As such, the informal sector is a heterogeneous collection of activities, typically described as small-scale, unregulated by the state, and involving non-wage forms of employment. Detailed studies revealed that this was little more than another stylised and often misleading description. In his critique of the informal sector concept, Jan Breman pointed out that on grounds of smallness of size, India's small scale modern industries belong to the informal sector; but to the extent that such units typically employ wage labour and are also regulated by the state, they clearly do not (Breman 1976). Such an anomaly arose partly from the

tendency to conflate smallness of size with informality, and the insistence on attempting to allocate all activities into just one of two arbitrarily defined categories. This leads on to the second issue of the relationship between activities in the formal and the informal sectors. The early assumption of independence was soon questioned by empirical investigation which revealed a variety of linkages between the two sectors. Bose's study of small manufacturers in Calcutta, for example, revealed the extent to which small firms bought in inputs from large firms, and at the same time acted as subcontractors (Bose 1974). The conclusions drawn from this were that, first, informal sector manufacturing is subordinate to, and exploited by large formal sector enterprises, thereby limiting the prospects for accumulation and hence for viable small scale industrial development. And secondly the notion of separate sectors was totally untenable, fatally undermining the original dualist conception of the economy.

Having said that, one of the positive benefits to come from the informal sector approach was to emphasise relationships between small and larger scale manufacturing units. This concern with relationships is at the heart of a more recent conception of 'networks' of small firms bound together by a variety of linkages. According to Sengenberger and Pyke, the main problem facing small manufacturing units is not just their size, but their isolation and their powerlessness (Sengenberger and Pyke 1991). Small units have fewer resources, less time and less expertise than their large counterparts. Individual small enterprises are likely to be in a weak position in relation to banks, to wholesalers and traders and the large companies who dominate the marketing system. Not only do they have less ability to search out and develop new markets for their products, they may also experience problems in keeping abreast of new technology. Individual small firms, in other words, face greater uncertainty and are less able to control their environment than large firms; indeed the evolution of

large firms in the Anglo-Saxon world has much to do with attempts to reduce and limit the uncertainties of a competitive environment. The obstacles to small firm competitiveness can be mitigated by action 'from above', as is the case in India for example where the government attempts to support small units by providing a range of services for them. However, Sengenberger and Pyke make the important point that small firms can themselves begin to overcome these problems by "linking up with the resource pools of others, be it large firms or small firms, to gain strategic options." (Sengenberger and Pyke 1991; 9). In other words, small firms can help themselves to overcome their individual powerlessness and lack of resources by forming alliances, either with other small firms, or with large units. In both cases, it is the localised network of interacting small firms that is the focus of concern rather than the individual constituent enterprises.

The notion of local networks and small firm alliances has become extremely fashionable in recent times among social scientists. Of course such ideas are by no means novel to geographers; on the contrary, linkage and agglomeration are part of the stock in trade of industrial geography. What is novel is the resurgent interest in ideas about networks, agglomerations and industrial districts. Attention has focused on two models of small firm networks, the Emilian model, and the Japanese *shitauke* system. The former comprises a localised agglomeration of small firms which both compete and cooperate with each other. The latter describes a situation in which small firms thrive through their links with one or other large enterprise. The next sections outline these two models, before going on to consider their applicability to the study of small firms in India.

The Emilian Small Firm Model

The sociologist Arnaldo Bagnasco is credited with drawing attention to the distinctive development pattern taking place in the 'Third Italy' (Bagnasco 1977). This North Central region of the country is distinguished from the industrialised North East, and the backward South by the growth of a multiplicity of small firms. In the early 1980s, the "Emilian model" was drawn to the attention of the wider English speaking world with the publication of an article by Brusco (Brusco 1982). Since that time there has been a veritable explosion of research and commentary attempting to explain how it is that small firms in North Central Italy, and especially the province of Emilia-Romagna have been able to grow and multiply in the face of competition from large-scale factories. Beyond that, Emilia-Romagna has attracted attention because of the potential policy implications of this pattern of regional development. The question here is whether the Emilian model can be replicated elsewhere, and thereby contribute to economic regeneration.

The important features of the Emilian model are that firstly, industrial production is undertaken in a large number of small/medium enterprises. According to data assembled by Cooke and Morgan, 94% of firms in Emilia have fewer than 10 employees (Cooke and Morgan 1991: 13). Secondly, there is a pattern of geographical specialisation, such that particular industrial sectors concentrate into particular districts. Thus for example, light engineering firms tend to cluster in Bologna and Modena, ceramics concentrates around the town of Sassuolo, and the knitwear industry is associated with Carpi (Leonardi and Nanetti 1990). The third feature identified by Brusco is that small industry in the province receives the active support and backing of both regional and local government agencies (Brusco,1990).

Identifying the distinctive features of current Emilian development does not tell us much about how these industrial districts have come into being and how they have succeeded in resisting competition from the large firm sector. It is possible however, to piece together a picture of how these districts have evolved recently, by drawing on Brusco's later writing, and a recent article by Bianchi and Gualtieri (Brusco 1990; Bianchi and Gualtieri 1990). In this account, we will focus on the engineering industry, and leave to one side the development of the consumer goods industries which appear to have followed a somewhat different trajectory.[1]

Emilia-Romagna is and long has been a prosperous agricultural region, famous amongst other things for Parma hams and Lambrusco wine. Agricultural prosperity helped to support a wide variety of artisan industries. Some of these produced consumer goods such as shoes and knitwear for local consumption, while other workshops produced and repaired agricultural machinery and food processing equipment (King 1987; 197ff). It was the light engineering workshops that from the late later 1960s began to be integrated into the production process controlled by the large scale producers in the North East. This process took place against the background of growing labour militancy in the Milan-Genoa-Turin triangle, which eventually resulted in the late 1960s with the unions achieving their ambition of wage indexation. Faced with labour unrest, large firms like Fiat attempted to loosen the grip of the unions by subcontracting the production of components to small, non-unionised workshops in Emilia-Romagna. In the course of the 1970s, these small workshops competed for subcontracting work, and used their profits to upgrade their machinery and techniques of production,

[1] In the consumer goods industries, the literature stresses the important role of trading and merchant groups who use their market knowledge to orchestrate production. A classic example is Benetton, which is neither a traditional retailer, nor a producer. It uses market data from its network of franchises around the world to inform itself of changing demands, and that information is used in placing orders with more than 100 small independent knitwear producers.

replacing old-fashioned lathes with CNC (computer numerically controlled) machine tools. By the early 1980s, these firms faced a growing crisis. The world-wide recession led many of the large firms to reduce output with the result that the market for subcontractors began to wither away. However, instead of collapsing, these small firms have continued to thrive, but no longer in the shadow of large firms. Their survival and continued prosperity is generally attributed to two important factors. In the first place, small firms have been able to exploit their *flexibility in production* to develop new markets and new outlets. In the past, small engineering units may have produced components for Fiat, but today, using their general purpose machinery of lathes and CNC machine tools, they have created new niches for themselves by diversifying their product markets. Individual units may specialise in turning out particular products and components, or in performing particular processes, but they are not tied to a particular end-user. On the contrary, they produce the 'raw materials' which feed a range of end-users, producing amongst other things consumer durables including Marini motorbikes, as well as investment goods like machine tools, packaging equipment and earth removing machinery. Linking up to a number of different end-users and their intermediates is a way of reducing dependence, and minimising vulnerability to demand shifts.

The similarity between this form of industrial organisation and that described for Sheffield and Lancashire by Alfred Marshall in the late nineteenth century has not been lost on a number of commentators. Both Bellandi and Becattini, for example, appeal to Marshall's writings on external economies and agglomeration for an explanation of the contemporary Italian industrial district (Bellandi 1989: Becattini 1990). Marshall, and subsequently Florence, writing about the interwar West Midlands economy, saw the concentration of similar or complementary industries in a relatively small geographical area as offering a means by which

individual firms could either reduce their costs and/or increase their revenues. (Florence 1948: 1972). With a greater division of labour, and specialisation by firm, each individual unit will benefit from increased overall demand, raising its productivity and reducing its costs. The internal economies achieved by each individual specialist producer are then transmitted to other producers in the form of external economies. Such 'localisation economies' may be supplemented by 'urbanisation economies'. As an agglomeration develops so does a pool of 'common resources' - a localised pool of labour, of capital, and what we would today describe as infrastructure, all of which are available to be tapped into by the constituent firms of an agglomeration. For both Marshall and Florence, the industrial district - the 'factory without walls' - could be as efficient a means of organising production as the large vertically integrated firm - the 'factory within a wall' (Florence 1972: 100). Clustering allows economies of scale which, while external to the individual firm, are internal to the industry. The essential efficiency of small scale, localised production is, for Becattini and for Bellandi, the secret of Emilia-Romagna's success. The difficulty in accepting such an explanation at face value is that competitiveness appears to have been maintained, not so much by the neo-classical mechanism of individual firms pursuing their own self-interest, but rather through the creation of a collective support system (Harrison 1992).

The second factor which appears to have been influential in enabling small firms to adapt and thrive has been the development of *informal and formal collective support systems.* Informal support systems are those developed by small firms themselves to collectively address their problems, and they include trade associations, credit unions, and joint marketing arrangements. Since the 1970s, these 'private' cooperative endeavours have been supplemented by more formal systems of support organised through government. Until 1977, the regions in Italy were purely administrative organs of the central government. With the passing of

a Presidential decree in late 1977, the centre, under pressure from the regions, delegated responsibility and (extremely limited) funds to them for territorial development, artisan industries and professional training (Leonardi, 1990). The different regional authorities have interpreted these responsibilities in different ways. In Emilia-Romagna, because of the concentration of small and medium enterprises, the thrust of the (Communist) regional government's efforts has been directed at harnessing, consolidating and strengthening the small enterprise base of the region. The policy is based on the conviction that, left to themselves, small firms

> "are simply not equipped to cope with the challenges of accelerated technological change, higher quality products, and more globalised markets. The mono-industrial culture of the districts was a further stimulus, because if a sector went into terminal decline. it could well drag an entire area down with it." (Cooke and Morgan, 1991: 53)

Hence the policy has been to create a network of technology and business centres whose principal role is that of providing 'real' or structural services to producers (Garofoli 1991: 132). In this context, 'real' services are distinguished from financial services. The provision of loans and credit is left in the hands of banks and financial institutions, while the regional authority concentrates on those services which will be more directly beneficial to producers and production. The term is infinitely broad but includes research and development for specific industries, market research, professional training, quality control, materials and product testing, advice on new technology, and management consultancy services (Bellini, Giordiani and Pasquini 1990;172/3). The apex organisation is ERVET (Ente Regionale per la Valorizzazione Economic del Territorio) established in 1974 to act as a general development board for the region. Under its auspices a number of specialised centres was subsequently set up, including CERMET which undertakes research, provides advice and testing facilities for the metal-

using industries; ASTER, whose main task is to collect and disseminate information about new technology, while CITER and Centro Ceramico undertake research, training, consultancy for the textile and ceramics industries respectively (Bellini, Giordiani and Pasquini 1990; 175/182). The main role of this system of institutional support is to encourage technology transfer and continuous innovation among small firms; and secondly, to collect, analyse and disseminate information about market trends that will be relevant and useful for the local industrial community. The belief is that through adopting the latest technology, by putting the emphasis on quality, and by anticipating market trends, small firms will continue to prosper.

One of the important features of this network of business and industry centres is that they operate within a strongly collaborative framework. ERVET is not a department of the regional government, but an autonomous body. Three quarters of its shares are held by the regional council, with the balance being held by local banks and Chambers of Commerce. Each of the specialised local agencies has a board of management drawn from local industry, from the universities and local chambers of commerce (Bellini, Giordiani and Pasquini,1990: 174). The agencies thus draw upon accumulated local expertise and experience, and become a vehicle to mobilise local resources around a common purpose. The universities, for example have developed and strengthened their local ties by undertaking collaborative research projects. These locally-rooted agencies, with their local representation create "territorial embeddedness", which makes them more effective in responding to local needs than a remote bureaucracy in Rome (Cooke and Morgan 1991; Schmitz and Musyck 1993; 37). Just how effective these agencies are, and how much they have contributed to the continued development of Emilia-Romagna is open to question. Some commentators believe their role has been crucial in guiding the region's growth through the troubled 1980s. What

we do not of course know is what would have happened had this institutional support system not been in existence. The general consensus among research workers with direct experience of Emilian industry is that this support network has been crucial in maintaining innovation and ensuring high quality production (Cooke and Morgan 1991).

The 'discovery' of thriving networks of small industries in Emilia-Romagna has stimulated a search for similar arrangements elsewhere. Sforzi's analysis of Census data leads him to identify some 63 industrial districts in Italy, while other research has uncovered evidence of similar districts in Germany, Spain, Denmark and Canada (Sforzi 1989; for other studies see Pyke and Sengenberger 1992).

In turn, this empirical evidence of networks of small firms has taken on an enlarged significance because of the way that the concept of the industrial district has been appropriated by and incorporated into a broader analysis of changes in industrial organisation. Influential in this respect has been Piore and Sabel's *The Second Industrial Divide* (Piore and Sabel, 1984). The first industrial divide was the Industrial Revolution, in which mass production methods replaced small scale craft industries. The mass production model of Fordism is itself now in crisis, and this, according to Piore and Sabel, is partly because of exogenous shocks such as rises in the price of oil, but also because mass production methods are deemed to be inherently inflexible, relying on 'dedicated' machinery and therefore unable to satisfy increasingly affluent and sophisticated consumers' demands for greater variety. In turn this crisis of mass production opens up the prospect for a Second Industrial Divide, with a new model of industrial organisation based on the flexibly specialised small firm. The Italian industrial district is the paradigm of this emergent form of industrial organisation.

A number of geographers, notably Alan Scott, and Michael Storper, have drawn on this work, to argue that in the West a new geography of flexible accumulation is in the making.[2] Centres of mass production industry are in decline, and 'new industrial spaces' are in the process of being created (A.J.Scott 1988). This new post-Fordist world is defined above all by agglomerations of small and medium sized firms, which have a greater capacity to adapt to uncertain and changing product markets than large inflexible industrial organisations. Local/regional agglomerations of small flexibly specialised firms are, in this view, not simply feasible and sustainable, but are emblematic of a new industrial and geographical landscape.

It is not just in the West, however, where the thesis of 'flexible specialisation' is seen as offering a new model of industrial and regional development. A number of writers have actively canvassed the applicability of the idea to the Third World. Robin Murray, for example argues that just as in the West, where Fordism is in crisis, so in the Third World the received model of development based on large scale industrialisation has already revealed its limitations particularly in relation to the generation of employment. An alternative model of development now exists in the form of the industrial district of flexibly specialised small firms.

> "Structures which were regarded as barriers to modernisation - small family firms for example .... can now be seen as the potential subsoil for alternative paths of industrialisation...This alternative reading of the industrialisation

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[2] Scott and Storper's work is a hybrid version of Piore and Sabel, combined with French Regulation theory. The latter seeks to explain the present economic crisis in the West in terms of the collapse of the postwar 'Fordist' regime characterised by mass production of standardised consumer goods. A major difference between Piore and Sabel, and Regulation Theory lies in their identification of the reasons for the collapse of mass production. For the former, emphasis is laid on demand factors, and the growth of sophisticated consumer tastes. For the Regulationists, collapse has come about because of the growth of organised labour, whose wage demands have led to reduced profitability, spurring the internationalisation of production, and the consequent deindustrialisation of the West (Dunford 1990).

> process and its organisation suggest new directions for industrial management and industrial policy" (Murray 1992: 207).

Schmitz has also pursued the argument that flexible specialisation is a paradigm of great relevance for industrialisation in developing countries (Schmitz 1990; Rasmussen, Schmitz and van Dijk 1992). He and his collaborators have argued that clusters of small scale industry are discernible in parts of the Third World, but "too often trapped in low profit/low innovation competition" (Rasmussen, Schmitz and van Dijk 1992:3). What is needed is an understanding of the conditions under which such clusters can be transformed into 'true' industrial districts, capable of sustained growth and accumulation. The same point has also been made by Sabel, who argues that

> ".... some parts of the informal sector could under certain conditions develop into a Latin American (or Brazilian or Colombian) variant of the small firm model of flexible specialisation" (Sabel 1986: 40).

This coupling of the informal sector concept, and flexible specialisation raises the question of how, if at all, these ideas are related. In the informal sector debate, as pointed out earlier, the International Labour Organisation and personnel from the Institute of Development Studies at Brighton were very much to the fore. In the current debate over 'flec. spec.', the ILO, through the International Institute for Labour Studies, and the IDS at Brighton also feature prominently. But apart from this institutional linkage, there seems to be a more fundamental linkage, in the common concerns that underlie both the informal sector debate and the current flec. spec. model. As Caroline Moser noted:

> "The fundamental question underlying the whole informal sector debate concerns the ability or inability of small scale enterprises to generate not only employment, but also autonomous economic growth.." (Moser 1978: 1061).

That question is also at the heart of the flexible specialisation model. Whereas the informal sector debate eventually tended towards a pessimistic answer, based on the view that the informal sector was subordinated to, and exploited by the formal sector, the experience of Italian industrial districts affords a more optimistic assessment of prospects for small scale manufacturing activities.

The burgeoning literature on industrial districts has certainly opened up an interesting and potentially fertile new approach to looking at small firms, in both the developed and the developing world. It is not necessary to subscribe to the hype and exaggeration of the Piore and Sabel Second Industrial Divide thesis, with its dubious assertions regarding the end of Fordist mass production. The view taken here is that the literature offers some insight into how clusters of small firms can develop along an evolutionary, as opposed to involutionary path of development. The concept can be used both analytically, in the sense of inquiring into whether the organisational principles of the industrial district can be found elsewhere; it can also be used, as Schmitz seems to suggest, as a programmatic or normative tool which might indicate how a more vibrant and viable small firm sector could be encouraged through appropriate policy measures.

The Subcontracting Model

So far our attention has concentrated on non-hierarchical networks of more or less equal small firms, and the way that through co-operative strategies, they can collectively become efficient and innovative. But as pointed out earlier, small firms can also survive by allying themselves with firms in the large scale sector as subcontractors. As Holmes has pointed out, the distinction between 'subcontractor' and 'supplier' is elusive (Holmes 1986: 84). Subcontracting has been formally defined as

> "a business arrangement between two independent firms - one (the contractor) provides the orders and the other (the subcontractor) furnishes the work or the services for the processing of materials or the production of parts, components... according to the specifications and the marketing arrangements of the contractor (UN Industrial Development Organisation 1974, quoted in Leung 1993:274)

What this seems to suggest is that a supplier produces standardised parts and components, while a subcontractor produces parts and components to the specifications laid down by the purchaser. In practice the distinction is extremely fine, but is important if only because the term 'subcontracting' has acquired prejudical connotations.

In the context of the Third World, the existing body of literature on subcontracting has been coloured by the debate over the formal/informal sector. The view that tended to prevail after the 1970s was that informal manufacturing units subcontracted work from large scale formal sector firms, with the benefits of subcontracting being appropriated by large enterprises at the expense of small units. Subcontracting came to be seen as a means by which large units could evade labour and minimum wage regulations, and the power of organised labour, by farming out work to unregulated small units. In doing so, the large firms profited from the ability of small firms to recruit from a large pool of 'surplus' and hence cheap labour. Nagaraj expresses this view when he describes subcontracting in India:

> "Subcontracting is largely guided by two considerations; lower labour and overhead costs in small firms, and restricting in-house employment of workers to minimise the potential threat from organised labour" (Nagaraj 1984: 1451).

Subcontracting may encourage growth in the number of small enterprises, but individual subcontractors find themselves in the position of being squeezed by large firms to undertake work at the lowest possible cost. Profit margins are

thereby reduced, so that small firms are at best able to survive, but find growth and accumulation difficult if at all possible.

In recent times, this largely negative view of subcontracting has been challenged by a number of observers (Holmes 1986; Mead 1984; Lawson 1992). Lawson, for example, has drawn attention to the variety of forms and rationales of subcontracting. Following Mead and Holmes, she distinguishes three main types of subcontracting:

1. subcontracting as a means of minimising labour costs
2. subcontracting to achieve production smoothing; i.e. large units use subcontractors as a buffer against cyclical shifts in demand.
3. subcontracting to overcome scale limitations. This refers to situations where specialist suppliers/subcontractors can operate at high volumes and achieve economies of scale by supplying a number of independent large units.

Implicit in all three cases is the assumption that large firms resort to subcontracting in order to achieve cost reductions. For the moment we will go along with that assumption, but with the proviso that cost reduction per se may not afford a complete explanation for contracting out. The important element in Lawson's analysis is that these different forms of subcontracting are likely to have different implications for the subcontracting units and those employed within them. In the case of subcontracting to capture lower labour costs, (Fig 2.2, col 2) subcontractors may have little guarantee of continuing work, there is likely to be little security for workers, and given that the subcontracted work is likely to consist of simple, unskilled tasks, workers gain few new skills. Overall, such forms of subcontracting are unlikely to have a dynamic effect on the growth of the economy generally, except insofar as they contribute to the profitability of the

large firm sector. On the other hand, where subcontracting takes place to specialised contractors to gain the benefits of economies of scale, (Fig 2.2, col 3), the subcontractor is likely to have a more stable, long lasting relationship, which may itself encourage innovation and adaptability. The technological processes involved may require higher levels of technical skills and understanding, which may be transferred by employees into the establishment of new enterprises.

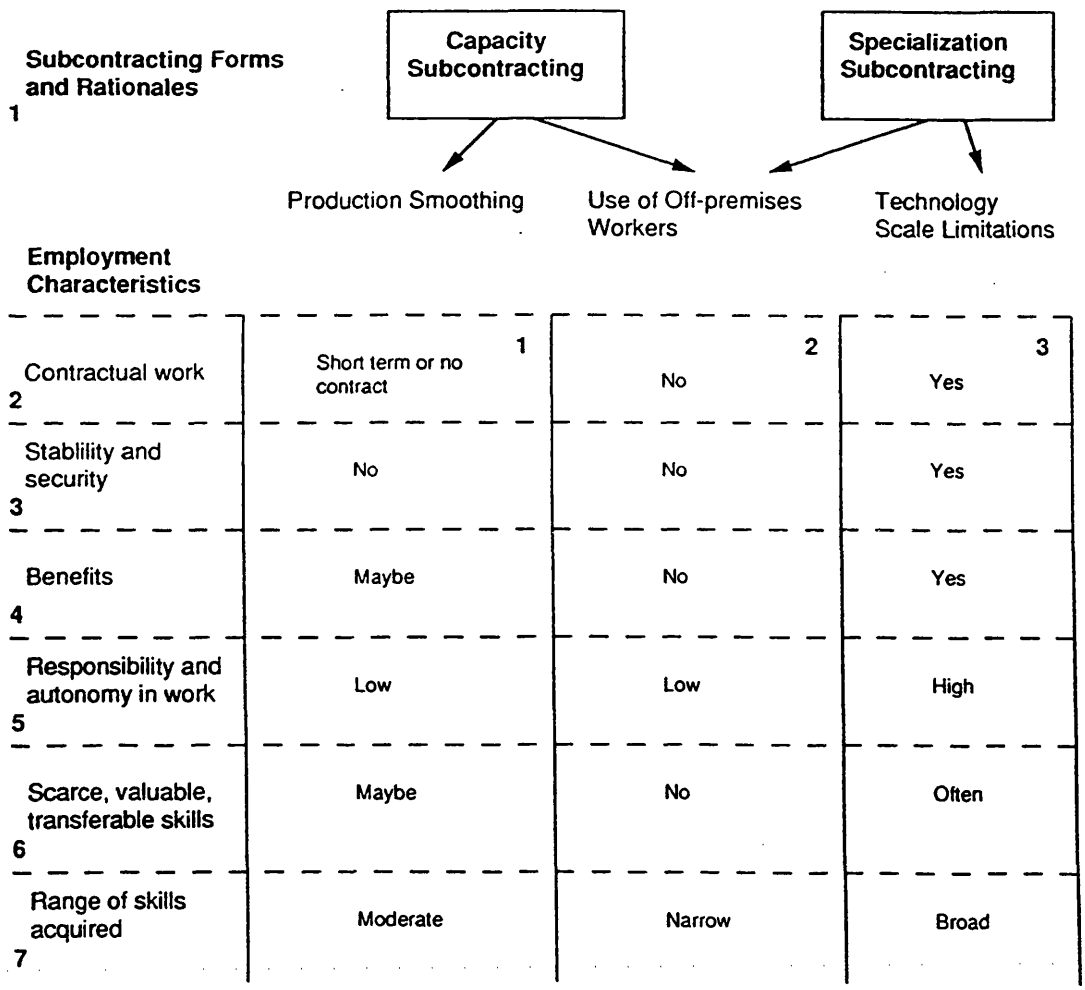

FIGURE 2.2 Forms of subcontracting and their employment characteristics (Source: Lawson 1992)

The overall benefits of this form of subcontracting may thus be considerably greater.

This latter form of relationship bears some similarity to the form of industrial organisation in Japan. One of the remarkable features of Japan's industrial structure is that, compared with many other countries, particularly in the developed world, small and medium sized industrial enterprises are numerically far more common (Table 2.1). The precise role that small firms play in the Japanese economy has been the subject of some controversy. One formulation views the Japanese industrial economy as a dual structure, in which large dominant firms have been able to enjoy a considerable competitive advantage through exploiting the multiplicity of small units. By drawing on an abundant, impermanent and unprotected labour force, small firms produce cheap components for the large firms (Friedman 1988: 128). This unequal exchange

TABLE 2.1

Employment in small manufacturing

	% manufacturing employment in firms with < 100 employees
Japan	72
Italy	58
USA	53
France	43
UK	22
W.Germany	16

Source: for USA and Japan, Glasmeier & Sugiura (1991); for Europe, Mason & Harrison (1990).

between formal and informal sectors may, according to Friedman, have been the case in the early post-war period, when both large and small firms faced particular difficulties. Pre-war, small firms had specialised in producing consumer goods for

both the domestic and export markets, both of which, at the end of the war had collapsed. Large vertically organised firms were confronted at the end of the war by a crippling shortage of plant and capital (Glasmeier and Sugiura 1991: 399). In these particular circumstances, small and large firms sought to resolve their particular problems by a marriage of convenience. Large firms made use of the capacity and resources of their smaller brethren, while small firms seized this opportunity to exploit this new source of demand for their services. More important still, during the American Occupation, large firms found themselves confronted by the rapid growth of militant Western-style trade unions, whose eventual defeat was the result of a combination of mass dismissals and sponsorship of more compliant company unions (Halliday 1975: chap 8). To improve the latter's appeal, large employers conceded life time employment guarantees (Kenney and Florida 1988 :128). This was probably the most important factor encouraging the use of outside contractors, because with their unprotected labour force, they offered a means of upholding that commitment, and avoiding the potentially explosive prospect of periodic layoffs and dismissals.

For specific economic and political reasons, large firms resorted to subcontracting in the early 1950s. Since then, large firms have deliberately and consciously chosen to continue to contract out work rather than reverting to the pre-war pattern of vertically integrated large firms (Aoki 1988 :214) so that today, "virtually all manufactured goods are produced within an elaborate network of specialised production relationships" (Glasmeier and Sugiura 1991: 401). This network of relationships comprises a number of tiers of subcontractors and suppliers. First tier units are prime contractors, generally those 'with a unique stock of production knowledge' producing major assemblies for the large enterprises (Aoki 1988 :208/9). Second tier firms are those producing major components, while third and fourth tier units tend to specialise in producing single

often standardised components for higher tier units. In the automobile industry, the major manufacturers "normally maintain direct first tier relations with about a hundred suppliers, which in turn have second tier relations with still smaller subcontractors and so on" (Aoki 1988: 204). The relationship between firm size and position in this hierarchical layering appears to be rather complex. In general, lower tier units tend to be small in size, but higher tier units seem to come in all sizes - large, medium and small.

Patchell's detailed description of the robotics industry provides a good illustration of this hierarchical layering of firms (Patchell 1993). Matsushita is one of the largest Japanese robot manufacturers, and a world leader in its field. Production is divided between Matsushita's own plant, and three independent contractors (Toyo, Mori and Taiyo) each of which specialises in producing complete but different robot systems for Matsushita. Each parent plant in turn depends on a number of other subcontractors and suppliers (Fig 2.3). All four assembly plants, along with other major manufacturers, rely on the large firm (1000 employees) of Nippon Thomson, for example, for the supply of machine bearings. Trading firms like Harada and Daiden act as general agents, buying in standardised electrical and mechanical components made by small firms, and supplying them in bulk to the big manufacturers. A further set of relationships exists between the assembly plants and firms like Nishino whose eighteen employees provide highly specialised milling services, and Minamimoto which also provides specialised machining services.

This example of robotics manufacture serves to emphasise the pattern of vertical disintegration which prevails throughout Japanese industry (Sato 1984). Large firms, whether they operate in technologically advanced industries such as robotics, or in car production or even in such 'traditional' industries as textiles

(described by Dore), farm out discrete phases of production to formally independent firms. This subcontracting is highly organised, and involves much more than a simple market transaction. Having chosen the path of vertical disintegration, large firms have also recognised the importance of developing and

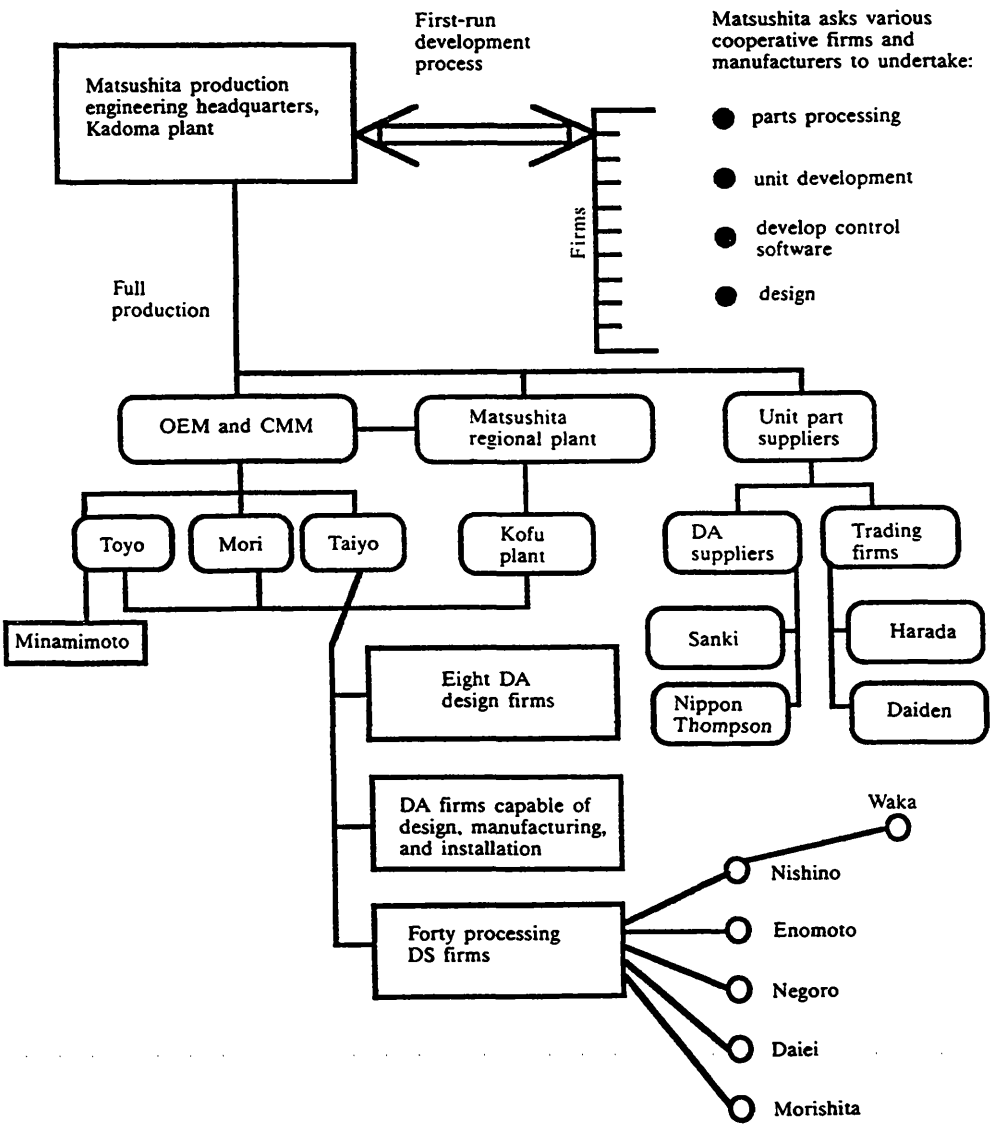

FIGURE 2.3 The Matsushita production system
(Source: Patchell 1993b)

maintaining stable, long term relationships with suppliers and subcontractors. And having invested time and effort in developing such long term relationships, there is a reluctance to sacrifice that effort for the possibly short-term advantage of cheaper supplies offered by other contractors (Dore 1986 :81). This is not to say that there is no competition between suppliers and contractors; in the car, textile and robotics industries, large firms encourage competition by using several suppliers for the same or similar products, and as Dore points out

> " A supplier or subcontractor which was unable to meet the prices and quality standards which other suppliers were providing... would in the end be dropped - perhaps after a grace period allowed for 'reform'. So there are market mechanisms at work, albeit 'lagged' market mechanisms" (Dore 1986 :81).

An important feature of subcontracting in Japan is, then, the development of 'relational' transactions - that is the relationships are long-term and 'quasi-permanent' (Aoki 1988 :204). This arrangement, according to Asanuma, is to be explained in economic rather than cultural terms (Asanuma 1989: 29). In return for the relative security of a 'relational contract', small and medium sized units can expect a good deal of support and co-operation as well as continuing orders. By offering support and security to their suppliers, large firms expect them to improve production over time, to invest in new technology, and to meet more exacting quality standards. Indeed because of their reliance on subcontractors, large firms have a vested interest in ensuring that suppliers are competent and efficient, and to that end, large firms offer considerable tangible help. Apart from helping suppliers and subcontractors with funds, by lending tools and machinery, and giving advice, 'it is common in the engineering industries for large firms to second engineers, technicians or skilled workers to their suppliers' (Dore 1986: 82).

This picture of the top-down diffusion of information from parent organisations painted by Dore needs to be filled out according to Patchell, by an appreciation of the genuinely co-operative nature of industrial development (Patchell 1993a: 802). Suppliers and parent companies may work together on new product designs and in modifying and improving manufacturing processes. Such shared technological development helps to further cement the relational ties between parent and suppliers and demonstrates the mutual commitment that underlies the system of relational contracting (Aoki 1988 : 216). This mutual commitment and the sharing of information which it breeds are in turn the foundation for achieving high quality and low cost production.

We have looked at two instances where small firms would appear to have enjoyed a considerable degree of success. In both Emilia, and in Japan, small firms have grown in number, have experienced a process of technological improvement, and helped to bring a degree of prosperity. Emilia, for example is now ranked the twelfth most prosperous region in the European Union, with a per capita GDP which is 28% above the European average, while unemployment in the late 1980s was half the European average (Commission of the European Communities 1991: Tables A24, A25). Japan's phenomenal growth hardly needs emphasising. There is continuing disagreement about the factors behind that country's post-war miracle, but a number of commentators firmly point to the significance of the system of industrial production and its incorporation of relational subcontracting (Sato 1984; Sayer 1986; Kenney and Florida 1988; Dore 1986). From a broader perspective, the overall growth in the number of small firms has been accompanied by an erosion of the wage differential that existed between employees in large and small units in the early 1960s (Aoki 1988 : 221). Admittedly, in Emilia, as Fergus Murray has pointed out, and in Japan, there are continuing wage differentials according to level of skill and gender, and there are

questions about the stability of work in small firms (Murray 1987). Such issues are not however peculiar to small firms, but they do remind us of the need to avoid an uncritical idealisation of the small firm. What these two examples suggest is that some form of small scale industrialisation is viable, but small scale industrialisation is not a panacea for all the problems of society.

The question that arises is under what conditions can small scale industrialisation be successful? Are there any features which are necessary to promoting a viable small scale sector? The account given above of Emilia and of Japan has emphasised the particular and unique 'local' circumstances in which small scale industrialisation developed. In both instances, the growth of small firms has to be understood in terms of specific historical circumstances, and these are unlikely to be replicated elsewhere. But the account also suggests that, regardless of specific historical origins, there are certain common general features which have been of some importance in sustaining the small firm sector. The first factor is the clustering of small firms in geographical space; and the second is the high level of cooperation and collaboration which characterises inter-firm relations.

Clustering

The literature on Italian industrial districts suggests that geographical clustering is a further element in successful small scale industrialisation. Clustering creates the basis for an expanded division of labour, and consequently for individual small firms to specialise in one or other parts of the production process. At the same time, the growth of a local agglomeration of related firms provides the basis for the development of both informal and formal methods of information diffusion. Firms within a cluster of related activities are more likely to be privy to relevant information than the physically isolated unit. In the case of Japan, much of the literature on relational subcontracting tends to ignore the geographical dimension

of the relations among firms. Even Patchell's informative account of the robotics industry relegates geography to the final conclusion, indicating that " (T)he robot makers are spatially dispersed, and each robot maker is supported by a vertical division of labour in its home base" (Patchell 1993b: 944). In other words, contractors and subcontractors tend to agglomerate around the parent companies. Geographers like Estall, and Sayer have tended to explain such clustering in terms of the adoption of Just-in-time methods, where frequent deliveries contribute to cost reductions by relieving larger firms of the need to tie up capital in large inventories (Estall 1985; Sayer 1986). Valid as that may be, the logic of the Japanese system of relational subcontracting suggests that clustering is as much about the exchange of information as of the flows of merchandise between firms. The point is highlighted in Glasmeier and Sugiura's account of efforts to decentralise industry from Tokyo, a policy which has foundered on the reluctance of small and medium firms to move out. In spite of rapidly rising land values, small firms remain highly concentrated:

> "Because of their network associations, they are prohibited from decentralising. Thus even firms which do own land must remain in their clusters for reasons of industrial access" (Glasmeier and Sugiura 1991: 409).

This suggests that clustering persists in spite of the shortage and high price of land in Tokyo and in turn, this persistence reflects the benefits of geographical association. The localisation of small firms, both in Japan, and in Italy appears to be significant for the way in which it promotes the potential for a greater division of labour and the exchange and interchange of information.

While a necessary condition, geographical clustering is not a sufficient condition for healthy and evolutionary small firm development. Amin's study of the Neapolitan shoe industry demonstrates how the clustering of units within a limited

sector of industry can lead to extreme competition, driving down rewards for all producers, and creating a low profit/low investment trap (Amin 1989). More interesting still is Dawson's study of small scale industry in Kumasi, Ghana (Dawson 1991: 173-207). Framed in the context of the formal/informal sector debate, Dawson looks at the effect of structural adjustment policies, noting their adverse impact on formal sector enterprises, and the consequent swelling of the informal sector. In most sectors, barriers to entry are low, and the result has been cut-throat competition. A similar fate has befallen the match industry of Sivakasi in Tamil Nadu State, India (Business India, Dec 7 1992: 91/2). It is estimated that there are as many as one thousand small units making matches, and these compete with each other, and with an even greater number of "tiny" units. Extreme competition has encouraged the small units to diversify into producing fireworks, while others specialise in printing labels and making packaging materials. Chronic overproduction and ruinous competition has encouraged the widespread use of cheap child labour and especially of young girls (The Economist, January 15 1994: 66). Low conditions of entry, very limited skill acquisition and a limited division of labour suggest that small industry in Sivakasi has reached a ceiling beyond which further diversification will be difficult to pursue because of the limited activity base.

Cooperation

What seems to be an important distinguishing factor between the Naples shoe industry and small units in Kumasi and Sivakasi on the one hand, and the small firms of Emilia Romagna and of Japan on the other, is the much more highly developed level of inter-firm cooperation in the latter instances. In Emilia, cooperation takes the form of both informal collective action, where firms jointly share information among themselves and have created credit unions and joint marketing organisations, while also being involved directly in the more formal

support system operated through ERVET. In Japan, as in Patchell's account, small firms are not passive recipients of orders from large firms but are actively involved in sharing information (Patchell 1993a). What is truly distinctive about the Italian industrial district, and the Japanese subcontracting system is that relations between firms are based on high levels of cooperation and reciprocity. It is by collective endeavour that small firms are enabled to overcome their individual weaknesses and to learn from others. But such collective efforts in turn depend on high levels of trust and trustworthiness between firms. To mainstream economists, trust is not an issue. Where cooperation with others confers benefits which individuals would not otherwise enjoy, then rational self-interested individuals will indeed cooperate to secure those benefits. The difficulty with this view is that rational self-interest may just as easily promote opportunism and free riding (Granovetter 1985: 487/8; Olson, 1965).

Trust appears to be an important determinant of genuine voluntary cooperation (Fukuyama 1995). Where individuals can count on the basic honesty, fairness and reliability of others, then genuine cooperation is feasible. Where there is little trust in others, then cooperation is likely to fail. In one sense, of course, all economic exchanges involve trust; indeed as Luhman points out, "the very complexity of social life makes trust a basic fact of social life (Luhman 1979: 4). The dilemma is that in trusting others, we lay ourselves open to abuse. Small firms in particular are open to such hazards. Of necessity they depend on others for inputs, markets and information generally, but that dependence exposes them to sharp practice, opportunism and cheating. They may be prey to unscrupulous suppliers of inferior raw materials and sub-standard components, to traders who use their market power to depress prices, to their fellow entrepreneurs who take advantage of information and help, but fail to reciprocate. Where opportunism is rife, cooperation is unlikely to be forthcoming and the opportunity to learn from

others, including learning about mistakes, simply does not arise. On the other hand, where strong bonds of trust prevail, the risks of abuse may be assumed to be small and a major obstacle to collaboration is removed. And in turn, successful collaboration reinforces and promotes mutual trust and confidence and encourages further collaboration (dei Ottati, 1994: 532). As Ostrom puts it, in her discussion of collective action in managing common property resources, such as forests and grazing land:

> "In a setting in which few individuals share norms about the impropriety of breaking promises, refusing to do one's share, shirking, or taking other opportunistic actions, each appropriator must expect all other appropriators to act opportunistically ... In a setting in which there are strong norms against opportunistic behaviour, each appropriator will be less wary about the dangers of opportunism" (Ostrom, 1990: 36).

This begs the question of how trust arises. One persuasive view is that trust is rooted in social and cultural norms and practices (Fukuyama 1995: chapter 1). In this view, relations between firms are 'embedded' in broader social relations which are themselves the product of a particular local history (Granovetter 1985). In the case of the Third Italy, a number of authors have pointed to the significance of agrarian relations, family type and land tenure (Bamford, 1987; Capecchi, 1989; Hadjimichalis and Papamichos, 1990; Putnam, 1993). These accounts suggest that the survival from pre-modern times until relatively recently of the extended sharecropping family, which combined farming with artisanal activity, fostered the virtues of initiative, enterprise and good management skills, while also encouraging a variety of forms of mutual aid:

> "..typical of which was the *aiutarella*, the exchange of labour between families at crucial moments in the agricultural calendar.... On a cultural level there was also the important practice of the *veglia*. During the long winter evening, families would gather .. to play cards and games, to knit and to mend, and to listen and to tell stories. Participation in the *veglia* .. involved rotating

> hospitality and a complex system of visiting" (Silverman, quoted in Putnam 1993: 142/3)

Such social arrangements helped to foster a high level of social solidarity, which in turn spawned the development of agricultural cooperatives, artisans and other mutual aid organisations (Putnam, 1993: chapter 5). These organisations, from the early decades of this century, provided a base for the growth of the socialist and communist parties. Their electoral success, especially in postwar Emilia Romagna, has been predicated on tapping into and organising within the dense network of associations within the province, while at the same time "championing small business interests.. and assisting the self-employed.. " (Weiss 1988: 49). The Left's success was based, in other words, on utilising and building on the existing high level of social solidarity, which was further strengthened by the conflict with the virulently anti-communist and pro-big business bias of the ruling Italian Christian Democrats. As Capecchi notes,

> "The clash with the national (Christian Democratic) government on the part of a (Communist) region leads, as a matter of fact, to the formation of a "community" culture .. in which local administrators, artisans, and workers are "united" as against a common enemy (Capecchi, 1989: 199).

What emerges from this brief sketch is that, because of its particular social, cultural and political history, Emilia Romagna is a region in which strong ethical values are deeply entrenched. Those shared social values emphasise mutual aid, solidarity, reliability and trust, and it is those strong social norms which underpin successful inter-firm cooperation, as well as strong collaboration between the private and the public sectors.

The point is brought home forcefully by the contrasting experience of the Mezzogiorno, which has a very different social, economic and political history

(Bamford, 1987; Mingione, 1981: 81ff; Putnam, 1993: chapter 5). Large landed estates were the main source of employment, providing occasional work for the mainly landless, and largely urban population. Competition for such work did little to promote social solidarity and communitarianism, while Spanish rulers in the south promoted distrust as a means of maintaining their political control (Pagden, 1988). Thus, whereas Emilia Romagna has developed a virtuous culture of trust, solidarity and mutual cooperation, circumstances in Southern Italy propelled it towards a culture of mistrust and suspicion.

The proposition that cooperation is rooted in socio-cultural norms and practices seems to be borne out in the case of Japan too. According to Murakami, "The single most important characteristic of the Japanese cultural tradition is a particular type of organisational principle, and that principle is the organisation of society into groups (Murakami, 1987: 35). Groups of unrelated individuals are omnipresent throughout Japanese society (Reischauer, 1977: 131) Schoolchildren, for example, are organised into 'han' groups; every residential neighbourhood has its 'han' association, and of course, within companies, working practices are based on groups (Sugimoto, 1966: chapter 10). Sugitomo suggests that the pervasiveness of group membership is a form of social regimentation, "designed to standardise the thought patterns and attitudes of the Japanese and make them toe the line in everyday life" (Sugimoto, 1996: 2445). Whether that is the case or not, what seems clear is that membership of a group carries with it a set of moral obligations to others, which help to promote the virtues of loyalty and cooperation. Both Dore and Morishima trace the origins of loyalty and goodwill to others to the influence of Confucianism, which, in its Japanese form, elevated loyalty to the status of supreme virtue, whereas in China, benevolence was more highly regarded (Morishima, 1982:8/9; Dore, 1983). While acknowledging the impact of Confucian ethics, Reischauer places much more stress on the legacy of

Japanese feudalism, which subordinated the individual to the village community, "which shared water resources for the rice fields and cooperated in handling its taxes and other administrative problems" (Reischauer 1977:132). As in the Third Italy, the nature of pre-modern social practices placed a premium on close association between non-kin and helped create a social pattern in which individuals were encouraged to work together as part of a larger grouping. This socio-cultural heritage, and the social norms of trust and cooperation embedded in it, is seen to be the basis for thriving networks of small firms. What this particular interpretation seems to suggest is that trust, and reciprocal cooperation, cannot be manufactured or engineered. Rather, trust and the prospects for successful cooperation are characteristic of some, but by no means all societies. In Coleman's terms, some societies have more social capital than others (Coleman, 1988).

The view that economic cooperation is embedded in socio-cultural norms and practices is by no means unchallenged. Weiss, while acknowledging that the successful small firm networks of Emilia Romagna thrive within a collectivist and communitarian tradition, argues that ..."..' solidarity and communitarianism' are consequences rather than causes of small firm organisation" (Weiss, 1988: 202). In this perspective, economic cooperation does not necessarily only arise out of social practices, but can be created. And one of the ways that can happen is through the repeated interaction between specialised firms within a limited geographical area. Repeated interaction between specialised small firms within an agglomeration creates a fund of local knowledge about the reliability and trustworthiness of others. Through repeated interaction, firms gain a reputation for better or worse (dei Ottati: 1994: 533). Those with a poor reputation may find themselves increasingly isolated and unable to prosper, and it is that prospect which can provide the incentive to build a good reputation by acting in a

trustworthy manner. In his examination of subcontracting networks in the Lyonnais engineering industry, Lorenz argues for "an incremental notion of trust, of trust being built up in successive stages" and this comes about through personal contact, which is facilitated by geographical proximity (Lorenz, 1979: 207). In this perspective bonds of trust are not necessarily a precondition for cooperation; rather cooperation and collaboration can be created on the basis of 'time and experience" (Lorenz, 1979: 207).

Public policy may also contribute to creating trust and promoting collaboration. By providing real services, the state can reduce the risks which confront small firms, but more important, by providing services that are effective and address the needs of small firms, a partnership between the public and private sector demonstrates just what can be achieved by collaboration. Such a model may in turn encourage further partnerships (covering, for example, the greater involvement of universities and training institutions), as well as stimulating cooperation between small firms, and between small and large firms. As Holmstrom has argued:

> ".. once (publicly provided) 'real services' exist and are used, they can be the basis for building up and encouraging trust. They are object lessons in the possibility of common action, and an incentive to organise more of it. (Holmstrom 1997: L17-L18).

In both Italy and Japan, there is a favourable policy disposition towards small firms. In Japan, since the early 1950s, the federal government has supported small businesses through the Office of Small and Medium Enterprises within the ministry for International Trade and Industry, a body which is widely credited with masterminding Japan's phenomenal postwar economic success (Glasmeier and Sugiura 1991: 406/8). In Italy, too, national policy has been very favourable to small enterprises (Bellini, Giordani and Pasquini, 1990: 173). But it is not at all

clear whether, if at all, such national policies have contributed to successful small scale industrialisation. In their review of European industrial districts, Schmitz and Musyck were sceptical of the state being able to play the role of a social catalyst. They argued strongly that

> ".. none of the industrial districts are the result of planned action, of a local or regional strategy. They all developed spontaneously. Public and private sector institutions did play a role in their growth process but they were not created by these institutions" (Schmitz and Musyck, 1993: 31).

More recently however, Humphrey and Schmitz have reported examples from both Denmark and Chile where public policy appears to have had a much more positive and effective impact (Humphrey and Schmitz, 1996). In Chile, the government agency responsible for promoting small manufacturing firms, SERCOTEC, introduced a programme to encourage networking among small and medium enterprises. In spite of what Humphrey and Schmitz describe as Chile's "highly individualistic and anti-state entrepreneurial culture" (Humphrey and Schmitz 1996: 1871), the programme appears to have met with some success. SERCOTEC's strategy has been to work with a small group of firms within a particular locality, diagnosing their problems and offering appropriate support, which may involve coordination with other agencies in both the public and private sectors, such as training institutes, banks, and suppliers. This problem-solving approach has helped to overcome initial scepticism, and allowed the programme to proceed to the next stage of encouraging close relations among the individual firms through setting up group workshops and visits to each other's factories. The programme is very much that of a catalyst; SERCOTEC's involvement seems to be self-terminating, with the aim that after a defined period of time, groups of small firms will be self-sustaining and require no further assistance. Evaluating this programme, Humphrey and Schmitz state that "Firms are not only working together, but also taking initiatives on product and process development, human

resource development, sales and finance" (Humphrey and Schmitz 1996: 1871). Here is an instance then, where public policy appears to have succeeded. And it has succeeded because of "skilled external assistance" (Humphrey and Schmitz 1966: 1872). That is, to be effective, state policy must address the real needs of small firms, and it must be able to provide effective means of dealing with them.

We have looked at cooperation, and the bases for cooperation, because it is fundamental to the functioning of industrial networks in both Japan and Emilia Romagna. There is an apparent division of opinion between those who argue that trust is a pre-requisite for cooperation and that trust and cooperation are embedded within specific local/regional/national social practices and traditions; and those who argue that trust can be engineered, either by 'time and experience', or by 'skilled external assistance'. These interpretations need not, however, be taken as mutually exclusive. Where there already exists a degree of trust and embryonic forms of cooperation among small entrepreneurs, public policy can build on that to develop a more dynamic and vibrant local economy. On the other hand, on the basis of Humphrey and Schmitz's examples in Chile, even where mistrust and suspicion seem to prevail, public policy can still achieve a great deal, provided support is relevant, high quality and directly useful to small firms (Humphrey and Schmitz, 1996).

From the foregoing account of small scale industrialisation, and the differences in experience of Emilia Romagna and Japan on the one hand, and Naples, Sivakasi and Kumasi on the other, it is possible to construct a number of ideal type models of small firm organisation:

1. The **competitive cluster** is characterised by

- a geographical concentration of small and medium enterprises which exhibit specialisation by product or process
- linkages with other firms, large and small, which are predominantly based on market exchange
- the absence of collective and cooperative organisations, such as credit unions, joint marketing and other self-help organisations
- lack of support for small firms by other public and private sector organisations.

Such an ideal type is one where there is little in the way of cooperation and trust, and in the absence of mutual help, competition prevails. Competition may drive down profits and wages, reducing the ability to accumulate and invest in new product and process technology, exposing individual units to pressures from large firms, or from more progressive firms elsewhere. A cluster of this type is likely to be characterised by low levels of accumulation and growth, and lack of dynamism.

2. The **non-hierarchically organised industrial district** is based on the Emilian ideal type, characterised by (Rabellotti, 1995):

- a geographical concentration of small and medium enterprises, which exhibit specialisation by product or process
- linkages between enterprises based on both market and non-market exchanges of goods and information
- a well developed informal system of cooperation between enterprises, as shown by the existence of credit unions, joint buying and marketing arrangements, and producers organisations
- a network of public and private agencies providing support for small and medium enterprises

In this instance, competition is overlain by forms of cooperation. Individual firms collaborate both informally, and formally through a local information network in which they themselves have a voice. This information network is the means by which individual, otherwise isolated small firms can cope with, or at least begin to reduce the many uncertainties that beset small firms - and especially uncertainties about market opportunities, new trends and products, and new technologies. Networking is thus a form of collective learning, which helps to promote collective adaptiveness and collective efficiency. Holmstrom believes that "an Indian model of flexible specialisation may already be developing in some places, or might be encouraged by national or local governments", helped by India's strong tradition of innovative craftsmanship, its informal networks of aid among entrepreneurs, and a well educated, numerate and self-confident labour force (Holmstrom 1993: M84). However, Holmstrom also points to the weakness of political institutions, especially at the local level, and the suspicion and lack of trust among Indian entrepreneurs of anyone outside the family, caste or religious community, as major obstacles to the development of collective action (Holmstrom 1993: M85).

3. the **hierarchically organised cluster** is characterised by
    - a geographical concentration of small and medium enterprises, which exhibit specialisation by product or process
    - linkages which are predominantly with large firms and based on quasi-permanent, and non-market exchange
    - a high level of cooperation between small and large firms, based on the exchange of goods, information and personnel

Characteristically, in this case, small firms develop stable and long term relationships with large enterprises. The stability of such relationships may be particularly beneficial for small enterprises, encouraging innovative behaviour while at the same time reducing the burdens of searching for new markets. Moreover, such relationships are the means by which technology transfer is effected, raising the overall technological sophistication of the small firm sector. Forms of relational subcontracting have received little attention in the literature on India, in favour of a more negative preconception. Yet there is some evidence that the government's ancillarisation programme has met with at least limited success. Nagaraj, for example, in his review of subcontracting refers to a study undertaken by the Bombay Chamber of Commerce and Industry of subcontracting by its member firms (Nagaraj 1984). That study revealed that large firms in a wide range of industries, but especially engineering, do subcontract and to a sizeable number of small firms in some cases. Kirloskar Bros, for example, are reported to regularly contract out work to 165 outside firms; Larsen and Toubro to some 600 mainly small firms, and Mico, manufacturer of auto components to some 260 small firms. More interesting than the scale of subcontracting is that these large companies offer more than simply a market for subcontractors. Most of the large firms included in the survey were found to provide some form of technical/management advice and support. Mico for example is recorded as providing comprehensive technical assistance, training of personnel, supply of tools and equipment, while Kirloskar Bros provided their suppliers with guidance about the selection of machinery and training for workers.

These three models provide us with a framework with which to look at the development of small firms. Like all models, they are idealised constructs; in practice, industrial clusters may well be hybrids, exhibiting characteristics of more than one of the individual models outlined above.

An approach to small manufacturing units which sees them as part of a network of interacting small firms seems to be potentially useful for the kinds of questions and issues that it raises. Attention is directed away from looking at the individual firm and how efficiently it uses capital or labour, and concentrates instead on identifying and examining clusters of small firms and the relations that exist within such clusters. What kind of relationships exist between small firms? Are they primarily competitive, or is there evidence of co-operative behaviour? Is there any evidence of the development of a local institutional support system for small firms? What role do government and non-governmental agencies play locally in relation to small firms? What relationship exists between small and large industries? Is the relationship simply exploitative, or do large firms actively promote the development of small firms through technology transfer and the provision of relatively stable markets for their output?

To date there are relatively few empirical studies that have adopted this approach. Among the few published studies of industrial clusters are Schmitz's study of the shoe industry of the Sinos Valley, Southern Brazil, and Morris and Lowder's study of the shoe supply industry of Leon, Mexico (Schmitz 1993; Morris and Lowder 1992). The building and carpentry industry of Mutare, Zimbabwe, are surveyed by Rasmussen, while Smyth et.al have provided a brief review of clustered industries (the rattan, batik, textiles and metals industries) of Indonesia (Rasmussen and Sverrisson 1994; Smyth et al 1994). In the Indian context, Pamela Cawthorne's recent study of the hosiery industry of Tiruppur (Tamil Nadu) is a pioneering exploration of an industrial cluster (Cawthorne 1995). Her original work was not concerned with industrial districts and clusters as such, but with 'the labour process', that is, with " what happens to workers as economic change takes place: how it affects work and what workers themselves do about it" (Cawthorne 1993: 47). As such, she says little about the local support system for industry. She

shows the industry is comprised of two sets of firms - a small group of large units, and their subcontractors, and a second group of small units which collectively produce finished garments. What further distinguishes the large and small units is that the latter group largely serves the domestic market, while the former have become increasingly export-oriented, with multinational retailing agents playing an important role in enforcing stringent quality control and design specifications. Her findings parallel those of Schmitz for Southern Brazil, where mainly foreign buyers have played an important role in fostering the growth of firms, reflecting the way that consumer goods producers in Italy have become organised. Finally, Holmstrom's monograph provides a non-quantitative and impressionistic description of small industry in Bangalore (Holmstrom 1994). Thus far, empirical examination has not proceeded very far. In particular, the role of the state in relation to the creation of a self-supporting and dynamic small scale sector has attracted little attention, in spite of the obvious policy implications. The question of whether public policy can contribute to furthering the process of small scale industrialisation is one of importance to many countries in the Third World and deserves closer scrutiny.

CHAPTER 3 THE SCOPE AND CONTENT OF THE SMALL INDUSTRIES POLICY

In India, a state policy of promoting small manufacturing industry emerged in the years immediately following Independence. The contours of this policy were strongly influenced by the views of a team of Western and Indian economists, set up under the auspices of the Ford Foundation, to advise the Indian Government. Members of that team subsequently established themselves at the Stanford Research Institute, and influenced the programmes of small industry development in Latin America (Kilby 1988: 226). From the 1960s, India began to export its small industry policy to other Asian and African countries, both through secondments to the World Bank and the United Nations Industrial Development Organisation, and through direct contacts with, and assistance to other governments which continue up to the present day. The latest report of the Small Industries Development Organisation records visits by delegates from seven countries - Kenya, Burkina Faso, Mauritius, Brunei, Mexico, Indonesia and Bangladesh - to learn from India's long experience in the field (GOI, Development Commissioner, Small Scale Industries, 1994: 40/41).

Within India, the policy of promoting the growth of a modern small scale manufacturing sector has been an important, but essentially subsidiary component of postwar development strategy. The Second Five Year Plan set India on the path of building a self-sufficient and modern economy, to be realised through a state-directed strategy of heavy industrialisation.

The Planning Era

Stern has described India at the time of its Independence in 1947 as

> " ..possibly the largest aggregate of impoverished, unhealthy and illiterate people in the world" (Stern 1993: 137).

In 1951 life expectancy at birth for men stood at 32.4 years, and 31.7 for women; only 27.2% of males and 8.9% of females qualified as literate (GOI, Ministry of Finance 1994: Appendix Table 0.1). With industry contributing 7% of GDP, India was overwhelmingly rural and poor. In the course of the 1950s, India embarked on an ambitious programme designed to transform that economy. The Industrial Policy Resolution of 1948, and the amended version of 1956, laid down the long term strategic goals and objectives, while successive five year plans spelled out specific medium term priorities and programmes. Apart from a brief period between 1977-80 when the Janata Government openly espoused Gandhian populism, the broad aims guiding post-Independence policy have been

- to achieve national self-reliance and national self-sufficiency[1]
- to create employment opportunities for all
- to raise living standards
- to reduce the concentration of economic power
- to achieve more balanced regional development

These broad, and potentially conflicting aims, were to be achieved by a state directed industrialisation drive, which formed the focus of the Second Five Year Plan of 1956. India's industrialisation was to be effected through an import substituting strategy, designed to free the country - at least in the longer term - from its past international dependence, and to reinforce its newly-won independence. Industries were to be protected from external competition by an elaborate system of import controls. High tariffs, quotas, and an import licensing system were designed to restrict the import of manufactured goods from abroad, and most especially of consumer and intermediate goods as a means of encouraging their domestic production (Balasubramanyam 1984: 123; World Bank 1989: ch 4). This strategy, widely adopted in Latin America, Asia and

[1]'Self-reliance' was first used in the Third Plan, but according to the authors of the Fourth Plan, that aim was implicit in the Second Plan also

Africa in the decades after World War Two usually involves the setting up initially of light consumer goods industries - such as textiles - and subsequently, through a process of backward integration, setting up heavier and more sophisticated industries in a stage by stage approach (Hirschman 1968). Already possessing a sizeable textile sector, as well as other consumer goods industries, the approach of the Indian planners in the Second Plan was to give the highest priority to:

> "increased production of iron and steel, and of heavy chemicals and of the heavy engineering and machine building industries.."
> (GOI, Planning Commission, 1956: 393).

This programme of large scale heavy industrialisation, supported by heavy investment in developing the country's infrastructure, especially railways and power supplies, was to be spearheaded by public enterprises under direct state control. Acknowledging that 'the private sector has a valuable role to play', the 1948 Industrial Policy Resolution argued for a 'progressively active role (for the state) in the development of industries.' (GOI, Industrial Policy Resolution 1948). The revised 1956 Industrial Policy Resolution sought to delimit the respective spheres of operation of the public and private sectors by identifying three categories of industry. Schedule A industries comprised a group of 17 industries ' the future development of which will be the exclusive responsibility of the state.' [2] Schedule B lists twelve industries 'which will be progressively state-owned.... but in which private enterprise will also be expected to supplement the effort of the state' (GOI Industrial Policy Resolution 1956). All other industries would be open to private investment, as well as to investment by the state.

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[2] This compares with six in the earlier Resolution. The expansion of the list is largely due to a more specific system of listing . Thus the 1948 version contained one general category of "iron and steel"; by 1956, this had been expanded into three separate categories - "iron and steel; heavy castings and forgings of iron and steel; heavy plant and machinery required for iron and steel production."

Superficially, the Resolution can be interpreted - and indeed has - to mean that the state would henceforth control the commanding heights of the economy, while the private sector would be severely limited (Thakur 1993). A closer reading of the Resolution suggests otherwise. Paragraph 8 of the Resolution, dealing with Schedule A industries states:

> "all new units will be set up by the state. This does not preclude the expansion of existing privately owned units, or the possibility of the state securing the co-operation of private enterprise in the establishment of new units when the national interest so requires. Railways and air transport, arms and ammunition and atomic energy will however, be developed as central government monopolies" (Industrial Policy Resolution 1956: para 8)

In effect, only four industries were to be totally closed to private enterprise. In essence what was proposed was the creation of a mixed economy in which the state would use its unparalleled ability to raise revenue, both domestically and from abroad, to invest in the infrastructure and at the same time to establish basic industries. These basic, nationalised industries would in turn supply the rest of the economy and the private corporate sector with basic inputs - and as it turns out, often at administered and artificially low prices.

But while there was considerable scope for private enterprise, it was not to be allowed total freedom of operation. On the contrary, the private sector was to be regulated through a system of licensing, introduced under the 1951 Industries (Regulation and Development) Act. The Act required the registration of all existing units in the 'scheduled industries' - broadly those listed in Schedules A and B of the 1956 Industrial Policy Resolution. It also required all units to be established after May 1952 to be similarly licensed by the Government in the case where the unit would use power and employ more than 50 workers; or where the unit employed more than 100 workers without the aid of power. For all

qualifying units, a license was necessary for the establishment of a new undertaking; the manufacture of a new product; and the relocation of any such unit. The broad rationale of this system was that in a country where resources - especially capital - are scarce, the use of such resources must be closely controlled to ensure that they are used wisely and in a manner consistent with social priorities, as determined by the Government (Ahluwahlia 1985:148). Thus the IDRA was the means by which the Government would exercise control over the pattern of industrial investment, avoiding overcapacity in some spheres, and a shortage of capacity in others.

Beyond that, the licensing system was intended to achieve other purposes too. The system allowed the authorities to determine who produced what, and, in theory, was a useful measure to control the activities of the large industrial houses, and thereby curb the growth of monopolies. Added to that, the license specified not just the amount of capacity to be created in each unit, it also contained provisions about where the unit was to be located. Potentially, the licensing system was a powerful weapon and the mechanism for implementing the stated aims of preventing the concentration of economic power, and achieving a more balanced regional distribution of industry[3].

This bureaucratic system of industrial regulation - the 'licence permit Raj' - has continued in operation until very recently. In the course of the 1980s, a number of industries were de-licensed, but the most comprehensive reform of the licensing and regulatory framework came in during and after 1991 as part of a sweeping liberalisation of the whole economy.

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[3]While the licensing provisions of the IDRA attract most attention, the Act also gave the Government other important powers - in particular, the power to take over 'sick' i.e. unprofitable units; and the power to control the price of basic commodities, notably iron and steel, and cement. The system of uniform delivered prices adopted for steel helped to perpetuate industrial concentration at the expense of the government's stated policy (Seth, 1986).

A further important consequence of the IDRA is that in defining a regulated, licensed manufacturing sector, the Act also defined an unregulated and unlicensed sector . This sector comprised all those units which fell below the employment ceilings specified in the IDRA. This unregulated sector, comprising the majority of units, was entirely outside the licensing system, so that there have been no controls over its growth and development. The First, and especially the Second Five Year Plan allotted a significant role to this unregulated sector. The essence of the strategy embodied in the Second Plan was to concentrate on building up the country's heavy industry to remedy the economy's basic structural weakness. Much of the necessary investment, along with investment in infrastructure, was to be made by the state, supported by the corporate sector, whose investments would be controlled by means of the licensing system. In turn, investment in industry, together with spending on infrastructure and on education and health would, according to the planners, provide a major stimulus to the economy, increasing the demand for wage and consumer goods. By means of the licensing system, the large-scale factory sector was to be prevented from meeting these demands.. Instead, demand for consumer goods was to be satisfied primarily by the small scale unregulated sector.

The Unregulated Manufacturing Sector

It will be useful at this point to spell out in a bit more detail the nature of the unregulated sector. A very mixed group of activities, it is the residual that is left after subtracting the licensed factory sector. It comprises, first, a group of village craft industries, or household industries as they are also referred to, e.g. pottery, handloom weaving, rice milling, and tanning. Such activities are not exclusively rural; they may also be found in some urban areas, along with more specifically urban crafts such as metalworking, the making of leather goods, printing, and the dyeing of cloth. The range of craft activities is huge, but whether carried out in

villages or in cities, they have a common underlying characteristic, which is that they are mostly household, or family-based activities. They tend to make little use of hired labour; and they make little use of machinery, especially of power-driven machinery. In essence, these are very largely pre-capitalist forms of production.

They are therefore, conceptually quite distinct from the second component of the unregulated sector which consists of modern small-scale forms of manufacture. The latter is distinguished, not so much by what they produce, but by how they produce. Modern small-scale industries tend to make use of hired labour, and inanimate forms of power. While conceptually there is a clear distinction between household and modern small industry, in practice the distinction may be more elusive. Some household units for example, may use additional, hired labour; some may make use of powered machinery. In other words, these are not necessarily exclusive categories, but more in the nature of the extremes of a continuum, so that some household units may evolve or develop or be transformed into modern small units. The obstacles to this are, however, considerable. Numerous studies point to the continuing subordination of the household sector to merchants and traders, whose low rewards to producers help perpetuate their poverty which in turn blocks their ability to adapt new forms of production.

The Case for the Small Scale Sector

It was this unregulated small scale sector that was expected, in the Second Plan, to satisfy the bulk of the demand for consumer and wage goods. The case for supporting the unregulated sector of household and cottage industries was expressed in the Industrial Policy Resolution of 1956:

> "The Government of India would...stress the role of cottage and village and small scale industries in the development of the national economy. In relation to some of the problems that need urgent solutions, they offer some distinct advantages. They provide immediate large scale employment; they offer a method of ensuring a

> more equitable distribution of the national income and they facilitate an effective mobilisation of resources of capital and skill which might otherwise remain unutilised. Some of the problems that unplanned urbanisation tends to create will be avoided by the establishment of small centres of industrial production all over the country"
> (Industrial Policy Resolution 1956, para 13).

Essentially the case for promoting the unregulated sector rests on three arguments:

1. Employment generation

The contention is that units in the unregulated sector use less capital and more labour per unit of output than their large counterparts in the regulated factory sector. Assigning the production of consumer goods to the unregulated sector would therefore economise on the use of scarce capital, and at the same time generate much needed additional employment. It was generally recognised that the capital intensive nature of the large scale sector implied that it would be capable of absorbing relatively little labour, and that only in the long term because of the long lead times involved. Meanwhile, there was little expectation of expanding employment in the agricultural sector where underemployment was chronic. The small scale industrial sector on the other hand seemed to offer greater hope of providing work. That aim could be achieved by channelling demand for consumer goods towards the small scale sector. With assured demand, the small scale sector would expand, generating employment. Superficially, the argument is very attractive. But employment creation would follow from increases in output only if it is assumed that the unregulated sector is operating at or near full capacity. In those circumstances, increased demand for the products of the unregulated sector would, conceivably, lead to increased labour inputs. But, in the village and cottage industries sector, accounting for the bulk of units in the unregulated sector, that assumption was (and remains) untenable. Underemployment was - and remains - widespread among small

producers (Koga 1968). Increased demand could therefore lead to 'jobless growth'. Indeed, the Second Plan was itself sceptical about the ability of the cottage industries to absorb more labour, noting that "There is little scope for increasing the workforce in traditional small scale industries, which are already burdened with excessive numbers" (GOI, Planning Commission, 1956: 14).

In the case of the modern small scale industries, there is perhaps rather more justification for expecting output growth to lead to additional employment, but the assumption that such units are 'labour intensive and capital light' has to be questioned. From the late 1950s at least, empirical research has repeatedly undermined the thesis that 'small is always beautiful'. Amongst others, Dhar and Lydall's study in 1961 suggested that some modern small industries may indeed conform to the stereotype, but it is by no means generally true (Dhar and Lydall 1961). The more recent, detailed World Bank study conducted by Little and others, came to the conclusion that "it is the medium size (50 - 200 workers), not the small, that is beautiful" (Little, Mazumdar and Page 1987: 126). Similarly, Bhavani's econometric study of small manufacturing concludes that it is not employment generating in the sense of substituting labour for other inputs such as capital (Bhavani 1991). All of this suggests that, while plausible, the argument that promoting the growth of the small scale sector as a whole would contribute to easing the employment problem is less than fully convincing.

2. Regional development.

The second argument advanced for favouring the unregulated sector is that it would contribute to a more balanced pattern of regional development and avoid the excesses associated with rapid urbanisation. What this seems to amount to is the contention that small scale activities can be decentralised much more easily than large scale enterprises. Small scale enterprises can thus be used as an instrument to promote rural and village development, and by creating

employment locally within the countryside, cityward migration can be stemmed. As applied to the village and cottage industries, this argument again makes little sense. By definition, the village industries are already 'decentralised'. The argument appears to be more applicable to the modern small scale industries, which in the 1950s, and today, tend to be urban in location (Koga 1968). But even here, it is questionable whether small industries can be more easily decentralised than large ones. Regardless of scale, modern industry in India has tended to be spatially highly localised, reflecting the importance of inter-firm and inter-industry linkages as well as the pull of agglomeration economies. Rural areas, by contrast, have had little attraction because of their poorly developed infrastructure, their distance from sources of supply and from markets. Such obstacles to dispersal are arguably even more difficult for small modern industries to cope with than their large scale counterparts.

3. Mobilisation of capital and skill

The final argument used to justify the production of consumer goods by the small scale sector is that by encouraging demand for its products, scarce resources of skill, of talent, and of capital can be mobilised for the social good. The argument seems to be that there are numbers of potential entrepreneurs whose skills and talents are currently going to waste, but which could be harnessed given some encouragement. At the same time, there are also people with capital (and presumably this is a reference to traders and merchants) who could be encouraged to invest productively in small enterprises. Guaranteeing a demand for the products of the small scale sector would provide the necessary stimulus to ensure the better use of the country's resource base, resulting in an expansion of the small scale sector.

The policy of promoting the village and small industries was justified, then, on the grounds that it would help to meet the broad policy aims of creating employment,

and of promoting balanced regional development. Such arguments have been repeated in successive Plan documents, extending right up to the Planning Commission's Approach Document to the Eighth Plan. Taking as its overall aim "the need to remove the sources of discontent and unrest by attending to unemployment, illiteracy, ill-health and decline of the living conditions of the poor..", the Document claims that

> "the thrust on employment and poverty will generate additional demand for mass consumption goods, the supply of which must expand. In meeting this requirement, the encouragement of labour intensive forms of manufacture on a decentralised basis is possible. Many consumer goods can be produced economically using labour intensive techniques and with savings in energy and capital." (GOI, Planning Commission, 1990; 47/8).

The same arguments used in 1956 to justify the promotion of the small scale manufacturing sector are still being used in 1990. The arguments are no more compelling now than they were then; if anything they are less convincing because of the accumulated weight of empirical evidence to the contrary.

While most commentators have accepted the highly dubious official justification for the small industry policy - thereby ignoring the weight of empirical evidence against it - an alternative view has been put forward. Tyabji has argued with some force that the real aim behind the policy was to encourage the growth of a stratum of small capitalists (Tyabji 1980). In Tyabji's view, such a policy was intended to subserve two objectives. On the one hand, the growth of modern small industry would help to create a growing domestic market for machinery and other inputs from the large scale factory sector. As such a small scale industry policy would be complementary to the heavy industrialisation drive spearheaded by the state and corporate sector. Heavy industrialisation would deepen the development of capitalism, while the growth of small industries would broaden the process, by creating a demand for the products of the large scale sector. Secondly, according

to Tyabji, there was also a more clearly political aim behind the policy - that of creating a class of entrepreneurs which would broaden the basis of support for the government (Tyabji 1984: 1425). To Tyabji's views, one might add a further plausible aim behind the promotion of modern small industries, namely as a means of attempting to avoid the further concentration of economic power in a few hands. One of the aims of the licensing system was precisely to secure that objective. However as the Das Gupta inquiry (GOI Monopolies Inquiry Commission, 1965), the Hazari inquiry (Hazari, 1967), and the subsequent Dutt Inquiry (GOI 1969 Industrial Licensing Policy Inquiry Committee) revealed, the licensing system was not in fact fulfilling its objective. One of the consequences of the evident trend to greater concentration was stiffer legislation in the form of the Monopolies and Restrictive Trade Practices Act (1969) but the Monopolies Inquiry also included in its recommendations that greater assistance should be directed towards the small industry sector as a further means of broadening the industrial structure and limiting the power of the big industrial houses.

The ideological origins of the small industry policy

A proper understanding of the small industry policy has to take account of the historical context in which it developed. That context includes the debates and discussions within the nationalist movement in the decades preceding Independence. The main argument outlined here is that the impetus for the emergence of a policy for promoting small scale manufacturing has to be located in the tensions between two divergent strands of thinking - between the modernisers, intent on creating a modern industrial capitalist society, and populists, intent on recreating the self-sufficient village community.

The growth of nationalist sentiment in the late nineteenth and early twentieth centuries focused attention on what was considered to be the crippling effects of

British rule on the sub-continent. The twin doctrines of free trade and laissez-faire as practised by the British colonial state in India - and indeed in other colonial territories - were self-serving and designed to buttress Britain's position as the workshop of the world. Laissez faire was not of course an absolute principle. In India the state did help to promote the growth of the railway system and of irrigation schemes. Such forms of intervention served to encourage the flow of primary commodities to Britain and free trade opened up markets in the colonies to British exports of manufactures. Indian nationalists were convinced that the lack of British support for the development of modern industries and the opening up of the country to British exports were actively promoting unemployment, underemployment and impoverishment. Superior British technology was seen to be undermining India's traditional handicrafts, while the colonial state's policy of benign neglect towards modern manufacturing, was creating as a consequence, a dearth of productive activity (Chandra, 1966).

For nationalists, the solution to growing impoverishment lay in the complete economic transformation of the country, to be achieved partly through the rehabilitation and modernisation of the handicraft sector, but primarily through the building up of a modern industrial sector. This task, it came to be argued, could not be left to foreigners, least of all the British, because to do so would leave India open to a continuing drain of wealth out of the country, to its enduring disadvantage. Echoing Marx, nationalists like Ranade and Dutt believed that a genuine economic transformation could only be effected by the growth of a specifically Indian capitalism. To that end, salvation lay in championing the cause of Independence, and the creation of an Indian state which in turn would contribute to the development of Indian capitalism by a state policy of 'direct, deliberate and systematic promotion of industrial enterprises' (Chandra 1966: 113; Mukherjee 1978: 1516).

At the forefront of the independence struggle stood the Indian National Congress, a heterogeneous movement, representing a broad spectrum of political sympathies and interest groups, including a large section of India's nascent capitalist class (Mukherjee and Mukherjee 1988; Byres 1982). Both the intellectual leadership of the Congress, personified by Jawaharlal Nehru, and the capitalist class were agreed on the need for rapid industrialisation as part of a programme of economic transformation. This was an axiom of mainstream nationalist thinking.

Opposition to this general consensus came from Gandhi, whose personal attachment to the charkha (spinning wheel) and austere lifestyle, symbolised his view of India's future development. Populism, according to Wiles, is based on the premiss that "virtue resides in the simple people, who are the overwhelming majority, and in their collective traditions" (Wiles, 1969: 166). Gandhi's Constructive Programme was just such a populist programme to revive and recreate the 'traditional' self-sufficient and self-governing village community (Bandyopadhyaya 1969: ch XI). His vision was one of small-scale village industries, complementing agricultural production. According to Judith Brown he was not "the fanatical opponent of all machinery and industry....He was not totally hostile even to large scale production" (Brown 1990: 300). But his vision was significantly different from that possessed by Nehru and the capitalists. While in the short term accepting the existence of large scale industry, Gandhi, like other populist thinkers, reacted against the social, economic and political dislocation of industrialisation and urbanisation, and championed the cause of (pre-industrial, and pre-colonial) local, agrarian communities. Because of his charisma, Gandhi drew large numbers of people into the struggle for Independence, and his Swaraj campaign may well have contributed to the growth of the cotton textile industry, but his economic ideals made few converts among the elite; and even among the generality of the population, it is not at all clear that his populist views were popular. While his views on economic matters were marginal, Gandhi's stature

within the Independence movement was such that they could not be ignored entirely.

The prevailing views among the intellectual elite and the capitalist class were pro-Independence, and pro-industrialisation. Beyond agreeing on general aims, there was little meeting of minds over how the long term aim of building a modern economy should be achieved. A major area of controversy was over the role to be played by the state, and whether industrialisation could best be carried forward by some kind of state capitalism, or whether it should be left to private enterprise (Mukjerjee 1978; Toye 1981: ch 2). In an attempt to fashion a coherent and detailed economic programme for an independent India, Congress set up in 1938 the All India National Planning Committee whose membership included leading industrialists (Walchand, Birla and Thakurdas) as well as politicians. While the Committee was never able to resolve the issue of how far the state should intervene directly in the ownership of industry, it did contribute to a general understanding that in order to create a modern economy, it would be both desirable and necessary to co-ordinate public and private investment decisions according to some overall plan for the economy (Ray 1979: 332-338). That planning was increasingly accepted by the capitalist class is illustrated by the publication by a leading group of industrialists of *'A Plan for the Economic Development of India'*, popularly known as the Bombay Plan (Thakurdas 1945). The eight signatories included Birla as well as the much more conservative J.R.D.Tata and two of his co-directors. The objective of the plan was for a doubling of per capita national income, to be achieved by a doubling of agricultural output, and a fivefold increase in industrial output (Thakurdas 1945: 9). Industrial development was to focus on heavy industry and especially the power and capital goods industries. The Plan presaged the main features of post-Independence industrial and economic strategy, and at the same time expressed the received wisdom among the business and political elite, which emphasised

industrialisation and the creation of a modern economy along Western lines. It stressed the priority of building up the country's heavy industry "without which we shall be at the mercy of foreign powers" (Thakurdas 1945: 58).

This linkage between industrialisation and security is an important theme running through much of Nehru's writings both before and after Independence (Nayar 1972). Particularly enlightening is a passage in "The Discovery of India", where Nehru sought to explain his rejection of Gandhi's views about creating a 'decentralised' society. "It can hardly be challenged", he wrote,

> "that in the context of the modern world no country can be politically and economically independent, even in the framework of international interdependence, unless it is highly industrialised... An industrially backward country will continually upset the world equilibrium and encourage the aggressive tendencies of more developed countries. Even if it retains its political independence, this will be nominal only and economic control will tend to pass to others" (Nehru 1961: 407/8).

For Nehru, and the political elite, industrialisation was not an end in itself, but the means by which, once Independence from Britain was secured, India would be able to ensure its sovereignty:

> "From both the economic and military viewpoints there could be no independence or freedom in India except through heavy industry" (Nehru, quoted in Gopal, 1975: volume 3, 163).

Nationalism was then the main driving force behind the preoccupation with rapid large scale industrial development and the strategy of self-reliant development (Nayar 1972).

While this was to be the main thrust of post-Independence strategy, the role of small and cottage industries could not be entirely dismissed, for there was a constituency of support for Gandhian populism and the idea of fostering cottage and rural industries. Congress itself at various times had supported resolutions in

their favour, sanctioning the establishment of the All India Spinners Association (1925) and the All India Village Industries Association (1935) as vehicles for Gandhian ideals (Brown 1990: 203, 275). Moreover the National Planning Committee had incorporated support for village and rural industries into the proposed National Plan, as indeed did the Bombay Plan. This established and longstanding political commitment could not easily be jettisoned whatever the views of Nehru, for fear of jeopardising Congress unity. A compromise was needed, such that village and traditional industries could be accommodated within the overall modernisation framework. The problem was how such support could be integrated into the overall industrial strategy. The National Planning Committee had suggested that the most secure way of ensuring the survival of the small-scale sector would be for the state to have total control over the large scale sector (Rao 1979: 16). An enlightened state would then be in a position to minimise the competitive and potentially destructive effects of the latter on the former. But this raised the controversial issue of the extent and type of state intervention in industry.

The modernisers, with Nehru among them, were quite clear that cottage and craft industries had no place in a modernising India. In his Presidential address to the Congress in 1936, he averred that

> "I believe that khadi and village industries have a definite place in our economy. But I look upon them as temporary expedients of a transition stage rather than as solutions of our vital problems" (Zaidi and Zaidi 1980: 97)

In *Discovery of India*, he also made clear his view that

> "adherence to out-of-date methods of production except as a temporary and stop-gap measure, is to arrest growth and development" (Nehru 1961: 408).

Likewise, Mahalanobis writing in 1959 about the small scale sector argued that

> "The long term aim would be to use as quickly as possible the most technically advanced machinery for the production of both investment and consumer goods. This is not immediately possible. It is therefore necessary to plan for a transition phase, in which preference would be given to capital light and labour intensive small industries.... As the supply of power, machinery and other capital goods increases, a gradual and steady change-over would be made to more efficient forms of production by the increasing use of machinery driven by power" (Mahalanobis, 1955: 71).

There is precious little support here for an unreconstructed cottage or household industries sector. Quite simply they had no place in the emerging economic landscape of a modernising India. On the contrary, they were the antithesis of modernity. For political reasons, however, the modernisers had little option but to concede a role to the village and cottage industry sector however difficult it might be to accommodate this sector within the overall thrust of capitalist development. It was of course much easier to accommodate the modern, mechanised, small industries within that framework. Using modern technology and modern methods of production, they fitted better with the views of a modernising elite. But openly espousing a policy for modern small industry at the expense of cottage and village industries would have caused political difficulties; instead these two very different forms of production were conflated, and in so doing created the confused and unconvincing arguments about the role of the small scale sector examined above.

While official documents bracketted together the cottage and village industries on the one hand, and the modern small industries on the other - as in successive five years plans - in practice at least, even during the 1950s, the focus of official concern was perceptibly shifting away from the Gandhian preoccupation with 'traditional' pre-capitalist village industries towards a policy of promoting small, modern capitalist enterprises. This shift is reflected in the changes in institutional arrangements. The All India Cottage Industries Board was established in 1948 to look after the interests of the whole unregulated sector of the industrial economy.

By the early 1950s, this all-purpose Board was disbanded in favour of a number of bodies with more limited and specific responsibilities - the Handloom and Handicrafts Boards were established in 1952, together with the Silk Board; the Kadhi and Village Industries Board in 1953; and in 1954, the Coir Board was established along with the Small Scale Industries Board. The latter had a remit to advise both Central and State governments on policies and procedures for promoting the growth of modern small industries. The cottage industries were covered by the other five Boards, whose continuing existence has provided a veneer of Gandhian respectability to Government policy. From the time of the Karve Committee onwards, a number of inquiries and reports advocated a programme of technological improvement, financed by the state, as the means by which village industries could be strengthened (GOI, Planning Commission: 1955). Such technological improvements could only have, as a consequence, the destruction of the Gandhian ideal, and the transformation of crafts into modern small industries. And without improvements, the craft industries would continue to languish, subordinated to merchants and usurers, and barely able to offer its practitioners a living.

In essence, by the mid-1950s, there had emerged a policy in India that sought to promote modern small industries. Officially, this policy of "stimulating entrepreneurship on a wide basis" in the words of the Administrative Reforms Committee (GOI, Administrative Reforms Commission, 1969:11) was justified and legitimised according to conventional accounts and according to successive governments on the grounds of contributing to the important policy objectives of creating employment opportunities for all, and achieving a more balanced regional distribution of industry. An alternative view is that the policy of promoting small modern industries was directed much more towards the aims of helping to create a self-sufficient Indian economy, and avoiding the growing concentration of private economic power. More fundamentally, however, the account given here suggests

that the policy originated in a contest between different ideological views of how India should develop in the post-Independence era. In the following section, we attempt to throw further light on the small scale industry policy by considering the content of the policy.

The content of the small industry policy

Much has been written about the vexed question of how to define a 'small' enterprise. It is not particularly appropriate to rehearse those well worn arguments here. Suffice it to say that in the context of India, small industry has a fairly specific meaning. In the first instance the modern small industries comprise all those manufacturing activities which do not fall within the purview of the five specialist Boards, covering handicrafts, handlooms, khadi, coir and sericulture. Secondly, small was originally defined on the twin criteria of employment, and investment. It will be recalled that the industrial licensing system applied to all units employing more than 50 workers and using power; or more than 100 workers where no power was used. Those limits in turn came to be used to define the small scale sector, but a further criterion was added. Small scale units were those with an investment in plant and machinery of less than Rs 500,000. In 1960, the employment criterion was dropped - on the grounds that a limit on the number of employees was wholly inconsistent for a policy intended to create jobs - and since then, 'small' has been defined by investment level alone. The investment ceiling has been raised periodically (Table 3.1), partly to take account of inflation, but also because a fixed ceiling would tend to inhibit the growth of individual small enterprises (Vepa 1988: 178).

Over the years a battery of measures has been introduced to encourage a multiplication in the number of small units, and at the same time an elaborate bureaucratic superstructure has come into existence to dispense various forms of advice and assistance. This programme was largely based on the

TABLE 3.1
Investment ceilings for small scale modern industries (M Rs)

	1953	1960	1966	1975	1980	1985	1991
Small units	0.1	0. 5	0.75	1.0	2.0	3.5	6.0
Ancillaries			1.0	1.5	2.5	4.5	7.0

Source: GOI Ministry of Industry, Development Commissioner, Small Scale Industries (1989).

recommendations of an International Planning Team sponsored by the Ford Foundation at the invitation of the Government of India. The Ford Team's report, published in 1954, argued for a comprehensive approach to address the various problems - of finding markets, of access to credit, to raw materials, of access to technical help and support - inhibiting the development of small enterprises (GOI Ministry of Commerce and Industry, 1954). Accordingly, the Team advocated the setting up of a central marketing organisation; a liberal credit regime; the establishment of specialised technical institutes, together with local technical training institutes. These recommendations were largely accepted and implemented by the Government.

Two central organisations were established:

- The Central Small Industries Organisation, later renamed the Small Industries Development Organisation (SIDO), is primarily responsible for policy formulation, and the oversight of technical services for small industries. Currently the SIDO operates Small Industry Service Institutes in each state, providing a wide range of advisory services, some of a strictly technical nature, others in the broader fields of marketing, business and management practices.
- The National Small Industries Corporation is the main agency through which the Government Stores Purchasing Programme is operated. It also provides plant and equipment to small units on a hire purchase basis.

Constitutionally, the implementation of the small industry policy is primarily the responsibility of the individual State Governments, each of which has its own specialised agencies dealing with small enterprises.

The specific measures introduced over the past four decades to encourage small industry can usefully be categorised into "preventive" and "promotional" (GOI, Ministry of Industrial Development, Development Commissioner, Small Scale Industries, 1973).

Preventive Measures

Preventive measures are those which seek to provide protection to 'infant' small industries from the weight of competition from medium and large factories. The argument here is that in a free market large factories are able to benefit from economies of scale, and consequently will be able to undercut small firms. In the Indian case, the industrial licensing system introduced in 1951 effectively prevented this from happening. Using the provisions of the IDRA, the expansion of capacity in the licensed factory sector could be controlled and prevented, thereby creating opportunities for the unhindered expansion of the small sector.

In the course of the late 1960s, against the background of a number of reports exposing abuses of the licensing system by the large houses (see above), a further protective measure was introduced in the form of the reservation scheme. Specified product lines under this scheme were exclusively reserved for production by small units. Beginning with 47 items in April 1967, the number of reserved items has subsequently grown, as is shown in Table 3.2. Over time, a number of items have been added to, and others have been removed from the list but apart from very general statements to the effect that the items are suitable for production by small firms, there has never been any explanation of the criteria used or the method by which items are considered for reservation. Over time the

number of items reserved has dramatically increased, the biggest jump being in 1978 at the time of the Janata administration, which was committed to a much greater emphasis on agricultural and small industry development than previous, or successive governments (Singh 1978). While proclaiming the basic principle that

> "It is the policy of the Government that whatever can be produced by small and cottage industries must only be so produced"
> (GOI Industrial Policy Statement 1977: para 6).

in practice a large part of this observed increase came about through sub-dividing broader categories of already reserved products (Ghosh 1988: 307). On top of this, the adoption of the National Industrial Classification to describe reserved items further increased the total. Under the previous classification system, the

TABLE 3.2
Items reserved for the small scale sector

Date of reservation	Number of items	
1967	47	
1970	8	
1971	73	
1974	53	
1976	3	
1978	324	
Total as at 26 April 1978		807
1980	27	
1981	12	
1982	9	
1983	35	
1986	8	
Total as at 1991		843

Source: GOI, Ministry of Industry, Development Commissioner, Small Scale Industries, 1989: 65.

total of reserved items as at the beginning of April 1978 stood at 504; by the end of that month it had been boosted to 807. By 1991, some 843 items were reserved specifically for production by the small scale sector. The sectoral distribution of these reserved items is shown in Table 3.3, from which it will be

seen that almost half (43%) of all items belong to the light engineering group, with a further 20% belonging to the chemical and chemical products group. The programme of reservation continues to operate to date. In the light of the liberalisation programme embarked on in 1991, it is anticipated that the

TABLE 3.3
Reserved items by sector

NIC	Industry Group	Number of reserved items
20/21	Food products	17
22	Beverages, tobacco	1
23/5	Cotton and other textiles	0
26	Hosiery and garments	31
27	Wood Products	14
28	Paper products and printing	30
29	Leather	17
30	Rubber and plastics	99
31	Chemical and chemical products	166
32	Non-metallic mineral products	39
33	Basic metal industries	14
34	Metal products	131
35	Non-electrical machinery and parts	55
36	Electrical machinery and parts	59
37	Transport equipment and parts	102
38	Miscellaneous manufacture	68
	TOTAL	843

Source: GOI, Ministry of Industry, Development Commissioner, Small Scale Industries (1992): Table 10.1.

policy of reserving items exclusively for small industry will be phased out (India Today December 31 1993: 86/88).

Promotional Measures

Over the last forty years, a variety of measures has been introduced to assist small enterprises, and to make entry easier. The range and type of assistance, and the number of agencies involved is considerable, so much so, that enterprising publishers have found a large market for books of the "How to start your own

small industry" variety (Sharma, 1989). The various measures of assistance can be grouped together into a number of categories:

a/ financial assistance

One of the widely acknowledged problems facing potential, as well as existing entrepreneurs is that of access to credit. Both the Central and the State Governments have devised schemes to provide medium and long term concessional finance for investment in plant and machinery. The State Finance Corporations are the principal sources of investment finance, and they in turn are refinanced by the Industrial Development Bank of India (IDBI). In 1989, IDBI established the Small Industries Development Bank as the apex institution to disburse financial assistance to small industry.

The main potential source of working capital is the banks. One of the earliest schemes of financial aid, established in 1960 was the Reserve Bank of India's credit guarantee scheme, which guaranteed the commercial banks against losses on loans to small enterprises. In spite of this, the commercial banks have been reluctant to extend loans to small firms, but the position improved after the nationalisation of the main commercial banks in 1969 (Patvardhan, 1988) Nationalisation gave the Government much greater direct control over the use of credit, and the Reserve Bank has used this power to require the banks to reserve 40% of their lending for so-called priority sectors, which include agriculture and small industry. The setting up of a new scheme by IDBI in 1988 to provide working capital to small units suggests that the banks remain reluctant lenders.

b/ financial incentives

Both Central and State Governments offer a number of financial incentives to small units. Small units benefit from excise duty concessions. Currently no excise duty is payable where the value of excisable goods is less than Rs 200,000

per annum; above that limit, excise is payable but at a discounted rate. Thus on production between Rs 200,000 and Rs 750,000, excise is payable at 90% of the usual rate. The significance of this concession varies from industry to industry because excise rates also vary, from 100% in the case of luxuries to 10% for capital and intermediate goods. One the basis of the then prevailing concessions, Tulsi estimated in 1980, that the excise concession was the most significant form of financial aid to the small industry sector (Little, Mazumdar and Page 1987: 28). Additional special concessions of a capital investment subsidy and a ten year tax holiday are also applicable in the so-called backward areas.

Individual States also offer incentives to small units, the nature and generosity of which vary from State to State as is demonstrated below in Table 3.4 It will be seen that

TABLE 3.4
State Financial Incentives for Small Industries

Kerala	Karnataka	Tamilnadu
- soft loan for purchase of developed land	- 10-25% investment subsidy	- 10% investment subsidy for units in drugs, electronics, car parts, solar energy equipment
- 10% State subsidy in districts not eligible for Central Subsidy	- interest free loan for plant and machinery - 10% interest free loan for buildings - 5 year interest free Sales Tax loan as working capital - subsidy on electricity tariff for 3 years	- 6 year interest free Sales Tax loan as working capital - subsidy on electricity tariffs for 6 years

Source: Jain & Kapur (1990)

Karnataka and Tamil Nadu offer apparently more generous incentives than the neighbouring State of Kerala, though whether such differences are at all significant is open to question.

c/marketing assistance

Central and State governments both extend help to small units through providing them with market research information, contacts with wholesalers, as well as direct purchasing schemes. The National Small Industries Corporation is responsible for operating the Government Stores Purchase Programme, under which some 409 items of government consumption, ranging from attaché cases to PVC pipes, are bought exclusively from the small industry sector; for a further 13 items (mattresses, filing cabinets etc.) 75% of purchases are from small units; while a further 50% of purchases in 28 additional items are bought from small units (GOI, Ministry of Industry, Development Commissioner, Small Scale Industries, 1989: 66/68). For non-reserved items, small units are given a 15% price preference over medium and large units. State governments similarly operate some form of purchasing scheme favourable to small industry.

A further scheme to assist small units is the ancillarisation programme, under which the SIDO encourages large public and private enterprises to sub-contract the production of components, parts, and sub-assemblies to small firms. Through the Small Industry Service Institutes located in each State, the SIDO operates a 'Sub-contracting Exchange' where small firms can enlist their capabilities and such information is then available for potential large scale collaborators.

d/technical assistance

The Small Industry Service Institutes through their offices in each State provide help, advice and assistance to entrepreneurs on the choice, installation and operation of plant and machinery. Both the SISIs and individual State

Governments have their own workshops and production centres, which combine a training and educational function, with the role of experimental workshops to produce prototype machinery.

e/physical facilities

Since 1955, State Governments, encouraged by the Centre, have embarked on an ambitious programme of developing industrial estates. There are today more than 1000 of these, offering a variety of sizes of industrial accommodation, available either at concessional rents, or for purchase. In theory, estates provide basic services of electricity, water supply, telephones, as well as good access to road and rail links. In practice, such facilities tend to be available on the larger estates and those in or near urban centres, but estates in rural areas, which are usually smaller anyway, tend to be poorly serviced. In a renewed effort to promote decentralisation, the SIDBI in 1991 launched a scheme to make finance available to State Governments to create "industrial agglomerations" in rural and backward areas.

Apart from workshops and factory units, the other significant form of physical aid is that concerned with the supply of raw materials. Within India, while many raw materials are freely available through the market, others, notably steel until recently, have tended to be in short supply and their distribution has been controlled by the Government. Lacking the contacts and the clout of their large counterparts, small industries have been at a disadvantage in securing their raw material needs. To overcome that problem, the National Small Industries Corporation, and its counterparts in the States, have assumed the responsibility for distributing raw materials to small enterprises.

This brief overview of the variety of measures to promote small industry demonstrates the highly elaborate and wide ranging nature of the support programme. The proliferation of individual measures, and their provision by a number of separate agencies at both state and Union level was recognised by the Janata Government as likely to bewilder and confuse as much as to encourage small manufacturers. To simplify the system and make it more user friendly, the Janata Government in 1978 set up District Industries Centres (GOI Industrial Policy Statement 1977: para 9). The laudable aim was to create within every District, an accessible local service dispensing advice and assistance to existing entrepreneurs about the kinds of help available, while at the same time undertaking investigations into the problems of local small manufacturing, and drawing up an appropriate District Action Plan. Beyond that, DICs were also set up to promote the further growth of the small scale sector, by mounting 'entrepreneurship' and 'self-employment' development programmes, particularly among women, Scheduled Castes and Scheduled Tribes.

This review of the small industry development programme underscores its highly elaborate character. The United Nations Industrial Development Organisation has described India as having ".. one of the most comprehensive programmes of small scale industry support in the world" (UNIDO 1990:120) The whole programme has been accorded a high priority by successive governments, but that priority has not been matched by a similar high priority in terms of public sector outlays. Table 3.5 shows the outlay of Central and State governments on village industries, small scale industries and the industrial sector as a whole. From the Second Plan until the Annual Plan of 1979/80, the industrial sector as a whole received 20 - 25% of total public sector outlays. By comparison, the outlay on the small scale sector has been relatively modest. The high point for the modern small industries was the period of the Second and Third Plans, when 1.2% and 1.3% respectively of total public sector spending was devoted to their support, but subsequently the

outlay declined and from the Fourth to the Eight Plan, public spending has been of the order of 0.6% of total outlays.

TABLE 3.5
Public Sector Plan Outlays by Centre and State Governments (Rs 10 million)

Plan period	Village industry (a)	Small scale industry (b)	Total industry (c)	Total public spending (d)	% of (b) to (d)
I (1951/6)	42.0	5.20	97.0	1960	0.3
II (1956/61	187.0	56.0	1125.0	4672.0	1.2
III (1961/66	241.0	113.1	1967.0	8577.0	1.3
Annual Plans (1966/69)	126.0	53.48	1637.0	6625.0	0.8
IV (1969/74)	243.0	96.19	3107.0	15779.0	0.6
V (1974/79)	611.0	221.74	9581.0	39322.0	0.6
Annual Plan (1979/80)	289.5	104.81	2640.0	12177.0	0.9
VI (1980/85)	1780.5	616.1	15017.0	97500.0	0.6
VII (1985/90)	2752.5	1120.5	22460.0	180000.0	0.6
VIII (1992/97)	3522.1	2812.1	46921.8	434100.0	0.6

Sources: Cols (a), (c), (d) .from Centre for Industrial and Economic Research (1993)
Col (c) from GOI, Ministry of Industry, Development Commissioner, Small Scale Industries, 1994

NOTE: Except for the Eighth Plan, where the data refer to planned outlays, all other data refer to actual outlays.

In this chapter we have looked at the scope and contents of the policy to promote small manufacturing industry in India. The question that arises is, what light, if any, does this throw on the aims of the policy?

As we have seen, successive governments have justified a small industry policy on three grounds - employment generation; decentralisation and the reduction of rural-urban inequalities; and the mobilisation of scarce skills and talents. It was

suggested above that the promotion of small scale industries would contribute to meeting the objectives of employment creation and regional/rural development only on the basis of certain assumptions - namely, that small industries are labour rather than capital intensive; that they are relatively footloose, rather than being locationally constrained. Both assumptions are questionable.

Moreover, when one examines the purported aims of the policy with the contents of the policy and the tools which have been used to implement it, there are striking shortcomings. It is remarkable that a policy which aims to promote employment generation by means of incentives and subsidies lacks a mechanism to tie the provision of assistance to job creation. This lacuna was emphasised by a report by the Comptroller and Auditor General of India into the performance of Tamil Nadu Industries Investment Corporation, which provides investment funds for small as well as medium industries in the State (Swaminathan 1986: 618). The Corporation's own guidelines require it to give priority to "the units capable of generating larger employment opportunities". The report was critical of the lack of a proper monitoring system to ensure that this requirement was fulfilled. The investigation discovered there were no records showing the number of jobs to be created by prospective applicants, nor was there any follow up to verify the number of jobs actually created, if any. What needs to be emphasised is that this is not an isolated instance of poor implementation. None of the schemes of assistance to small manufacturing industries are conditional on the creation of additional employment, nor are there any specific incentives to encourage job generation.

The second important formal aim of policy is to encourage geographical dispersal of industry and employment. The major tool for achieving this seems to be the programme of building industrial estates. As a tool, it is weak and, to anticipate a later discussion, has been shown to be ineffectual, yet the programme continues to

operate, consuming considerable scarce resources at a high opportunity cost. The interesting question is why persist with a programme which fails to deliver what it is ostensibly supposed to deliver?

At root, there is, in India's small industry policy, a gap between official aims and outcomes, a gap that is to be explained not simply in terms of poor implementation of the policy - though that may be part of the reason - but in terms of a fundamental confusion over what the proper aims of the policy are. The argument of this chapter is that this confusion and ambiguity over aims arose out of the way that the policy originated. The policy of promoting small manufacturing was essentially a political compromise between the differing views of Gandhian populists and industrial modernisers. Mahalanobis sought to reconcile these different views by providing an economic rationale for the promotion of small industry, but the economic rationale was subsequently elaborated to encompass a variety of other purposes. Not only was small industry seen as a means of providing employment, and rectifying imbalances in the spatial economy, it also came to be seen as a means of alleviating poverty in rural areas, and - to take Tyabji's view - to provide a market for the machinery produced by the large scale sector, to act as a counterweight to the growth of monopolies, and to encourage self-employment among women, Scheduled Castes and Scheduled Tribes. In other words, the policy acquired a multiplicity of aims, both economic and social, and in the process further heightening the confusion and ambiguity over whether the policy is essentially an economic policy, or a social policy. Such ambiguity of aims is not unusual, for governments frequently find themselves in the position of having to square straightforward policy goals with a variety of political pressures and social considerations. But the result is likely to be confusion as to what is the main priority, with the result that effort and resources are dissipated in seeking to achieve what may turn out to be divergent ends.

CHAPTER 4 THE GROWTH OF SMALL MANUFACTURING INDUSTRY IN INDIA

Attempting to evaluate the progress of India's policy of promoting small scale industry is difficult, and a large part of the difficulty arises from the lack of clarity about the real aims behind the policy. Should it be judged primarily in terms of its contribution to creating employment? to keeping down unemployment? to preventing or reducing the concentration of economic power? to its contribution to reducing regional and rural-urban disparities? Or should the programme be judged on the extent to which it has created "a sector of sufficient vitality to be self-sufficient" (GOI Industrial Policy Resolution 1956: para 14)? While the real aims of the policy remain open to question, there are still legitimate questions to be asked about the growth of the sector, its geographical distribution and the viability of small scale industrialisation. As we argued in Chapter 1, these questions are interrelated.

Apart from the ambiguities over the real aims of the policy, there is a further problem which confronts all forms of policy analysis. Even if it can be demonstrated that there has been some success in achieving a particular aim, it does not strictly follow that it is the policy as such which has contributed to the achievement of that aim. It is perfectly plausible that the aim has been achieved in spite of, rather than because of the policy. The growth of small manufacturing is a case in point.

In a previous chapter, it was pointed out that historically, the early stages of industrialisation have often been based on the growth of small manufacturing units. Only at a later stage, if at all, does a process of concentration and centralisation occur, with small units progressively losing ground, via mergers, take-overs, etc to large scale units. Anderson's review of the statistical evidence

of the role of small manufacturing in the countries of Africa, Asia and Latin America certainly suggests that "small workshops and factories emerge rapidly... in periods before industrialisation is in an advanced phase" (Anderson 1982: 926). In the case of India, we are confronted with an economy which is highly unevenly developed, combining simple craft industries at one extreme and a capacity to build nuclear power stations and satellite rockets at the other. In view of its recent and very uneven development, we might expect small industry to proliferate. Apart from this, there are several other specific features of the Indian economy which may well have contributed to the growth of small industry even in the absence of a positive government policy. One of the most important of these has been post-Independence economic policy. The overall aim of 'self-reliance' has implied a strict regime of limiting imports, and especially of consumer goods. In itself, such a stance may well have created the opportunity for the mushrooming of small enterprises. In an economy as poor and as starved of capital as India, it is highly improbable that the large scale sector could have satisfied the demand for a wide range of previously imported commodities even in the medium term. The restrictions on imports, together with the restrictions on what could be produced by large firms through the licensing system may have been far more important than any number of other specific government measures in promoting the growth of the small manufacturing sector. On top of this, we need to bear in mind the sheer geographical size of the country, and the poorly developed state of its infrastructure. Given the size of the country, and the impediments to the easy flow of goods, it might be expected that markets for goods would be localised and fragmented, stimulating localised, small scale production - a point made by Anderson (ibid: 921). Without labouring the point any further, suffice it to say that, if there has been growth and development in the small scale sector, it may well be as much the result of macro-economic conditions, as of the implementation of a specific small industry policy. We shall

return in a later chapter to consider the issue further. For the moment, we concentrate on charting the growth of India's small manufacturing sector.

The growth of small scale modern industry

The view that prevails in both the official and non-official literature is that the small industry policy has been remarkably successful when measured in terms of the number of units, the level of employment, and the value of output. Sen, for example refers to "the spectacular rate of growth of the small scale sector since the beginning of the Second Plan" (Sen 1982: 120). Similarly, Kashyap states that "the growth performance of the small scale units by broad economic magnitudes has been quite impressive", and he continues that

> "As of today, the small scale sector accounts for more than half of total manufacturing in terms of value added, and provides full or part-time employment for over three quarters of the persons engaged in manufacturing. It also accounts for more than one third of exports" (Kashyap 1988:668/9).

Battacharya, in support of his view that the policy of 'vigorously promoting small industry' has made tangible progress cites a mass of statistics:

> "The number of small units increased from 37153 in 1960 to 1.4 million at the end of 1985/6. The value of output generated in this sector increased from Rs7852.4 in 1960/61, to Rs380,500 in 1985/6. The contribution to total industrial production in this sector increased from 38.7% in 1960 to 50% in 1985/6" (Battacharya 1988: 94).

Such confident statements of success are not necessarily untrue. What is true is that the statistical base on which such pronouncements are based - and many more could be assembled - is less than robust . As Professor Sandesara put it, "one can say anything, even statistically [sic], ranging from the most complimentary to the most derogatory on small industry" (Sandesara 1988: 641). That possibility arises because there are a number of separate sources of data

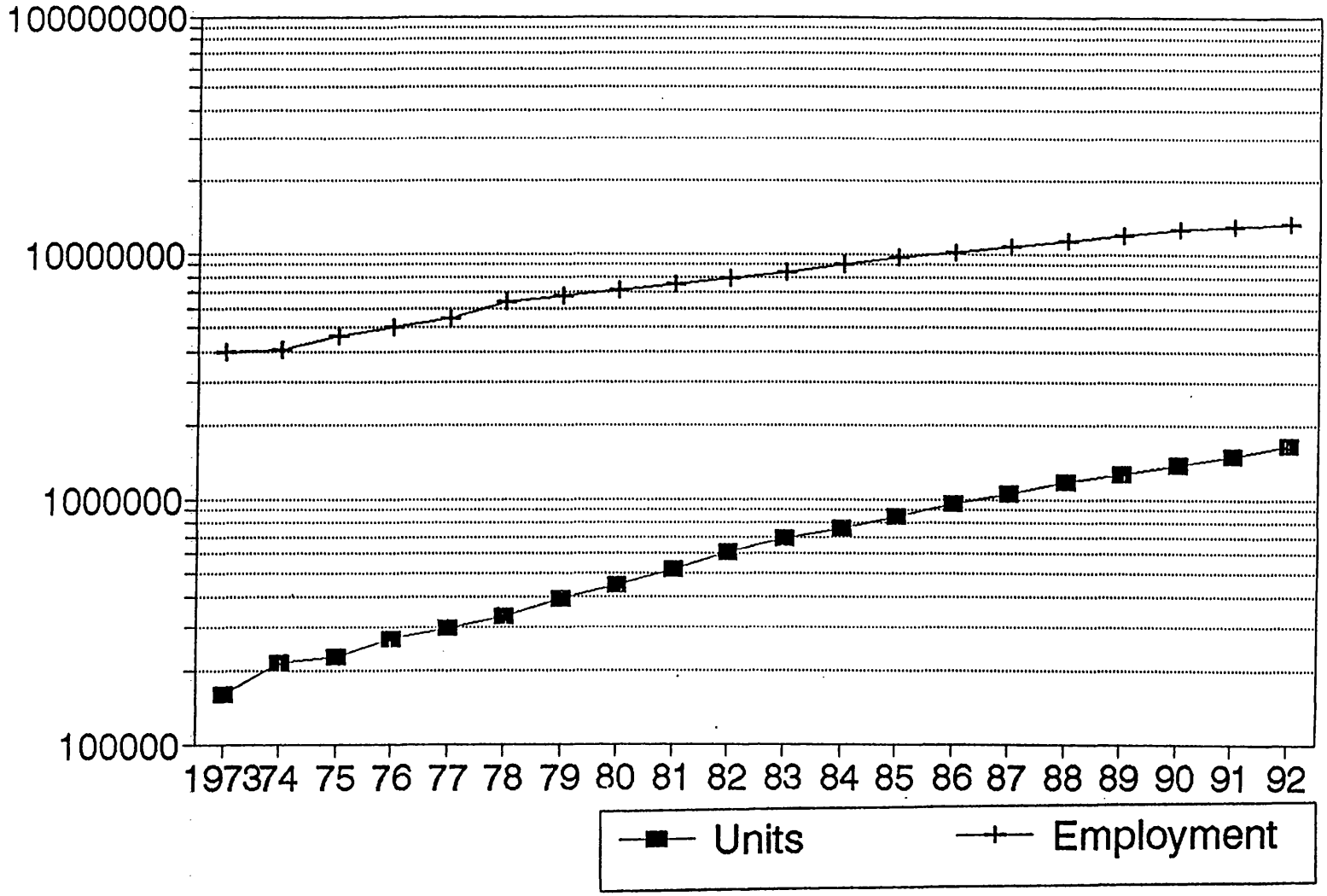
about small industry, but in the main they all suffer the weaknesses of incomplete coverage, compounded by inconsistency and non-comparability. The limitations of the database do not seem to be fully appreciated - and in some cases are not appreciated at all - by those who make use of it. The following section will look at these various sources, and their limitations, in an attempt to build up a picture of the performance of the small industry sector over the last three decades or so. The main sources to be considered are

- SIDO statistics on registered units
- the Annual Survey of Industries
- National Accounts
- the Census of Population

Small Industries Development Organisation

The Small Industries Development Organisation compiles data for small industrial units which are registered with the State Directorates of Industry. This data refers to units defined on the basis, not of employment, but on investment in plant and machinery. As pointed out earlier, the investment ceiling has changed over time, and this makes it difficult to compare data over time. Figure 4.1 is based on data published by SIDO. In 1960, some 36,000 units were registered, and the number increased through the 1960s, reaching 140,000 by 1972 and 1.64 million by 1992/3 (GOI Ministry of Industry, Development Commissioner, Small Scale Industries, 1994). Commensurate with this growth in the number of units has been growth of employment, from 3.9 million in 1973/4 to 13.4 million in 1992/3. SIDO compiles data not just on number of units and employment, but also regularly publishes data on the value of production and value of exports of the registered small scale sector.

FIGURE 4.1 All-India registered small scale industries
Units and employment, 1973/4 - 1991/2



Source: GOI, Ministry of Industry, Development Commissioner SSI (1989) for 1973/88;
GOI, Ministry of Industry, Development Commissioner SSI (1994) for 1988/92.

The SIDO data is widely used and referred to - it is the basis for Battacharya's data, quoted above - so it is as well to understand the limitations of this source. In the first place, the data refer to registered units, and registration is voluntary. Efforts were made in the 1960s to encourage registration, and to that end the various concessions and incentives made available to the small sector were conditional on registration (Ramachandran 1988: 47). The data is not therefore, a complete and comprehensive record of the small firm sector, but a summary of a self selected sample. Nor can the data be used as an index of the rate of new firm formation. Units may want to remain invisible to the authorities, only registering at such time as they need to avail themselves of official assistance. The size of this unregistered sector is unknown. SIDO estimates that unregistered units are between 40 and 50% the number of registered units (GOI, Ministry of Industry, Development Commissioner, Small Scale Industries 1989: 17)1, but precisely how this figure has been arrived at is unclear.

A further problem is that there is reliable evidence of the unreliability of the SIDO data. In 1972 according to the figures supplied to SIDO by the State Directorates of Industry, there were 258,000 units. The Census conducted by SIDO for the same year was able to identify only 140,000 units (GOI Ministry of Industry, Development Commissioner SSI 1977). The results of the Second All India Census, undertaken in 1987/88 also suggest considerable over-registration. As of March 31 1988, the total number of small units registered with State and UT Directorates of Industries was 1.1 million. After weeding out duplicate entries and those which were not small modern industries, the total was reduced

[1] The Reserve Bank of India, in its publication Currency and Finance, regularly reports data on the small scale sector. The data is based on SIDO statistics, but the number of units is inflated to include the unregistered sector. Thus, for 1987/88 the RBI records 1.59 million small units. For the same year SIDO records 1.05 million registered units, and estimates an additional 540,000 unregistered units. (RBI, Report on Currency and Finance, 1988/89:67).

to 986,861. But of those 57,000 were untraceable, and a further 300,000 had closed down. In short, out of more than a million registered units, only 610,00 were found to be in operation (GOI. Ministry of Industry, Development Commissioner, Small Scale Industries, 1992: 19).

A major problem with the SIDO data is that it is a cumulative record, so that once a unit is registered it continues to be included regardless of whether it continues in business or not. There is not, in other words, any mechanism for de-listing units as or when they fail. The two censuses of the small scale sector provided an opportunity for the State Directorates to compile a more accurate record, but this not been the case. While the Second Census recorded 610,000 working units for 1987/88, SIDO publications continued to claim 1.57 million units, rising to 1.64 million by 1992/3 (GOI Ministry of Industry, Development Commissioner, SSI, 1994: 4,5). Taking all the new registrations over the period 1987/88, and adding to the known figure of operating units in 1987/88, we arrive at a total for 1992/3 of 1.08 million units - two-thirds of the more impressive total claimed by SIDO.

There is a further consideration which may lead to the overestimation of the number of small units. Cawthorne draws attention to the way that the investment limit for small units may lead to the "formal and spatial splitting of firms under single ownership" (Cawthorne 1993: 47). That is, in order to qualify for continuing assistance from government, units remain within the prevailing investment limit, and growth is channelled into the setting up of other, apparently independent units. The investment limit thus acts as a disincentive to the growth of individual units, and at the same time it also inflates the statistics by including as independent units those which might more properly be described as being part of a single enterprise.

There are then serious limitations to the SIDO statistics. Their reliability and accuracy as to the number of units, employment levels, value of output, and value of exports is open to serious doubt because of the methods used in their compilation. Not the least important limitation is that a small unit is defined in terms of investment levels, and those levels have been raised periodically, making comparisons over time a difficult proposition.

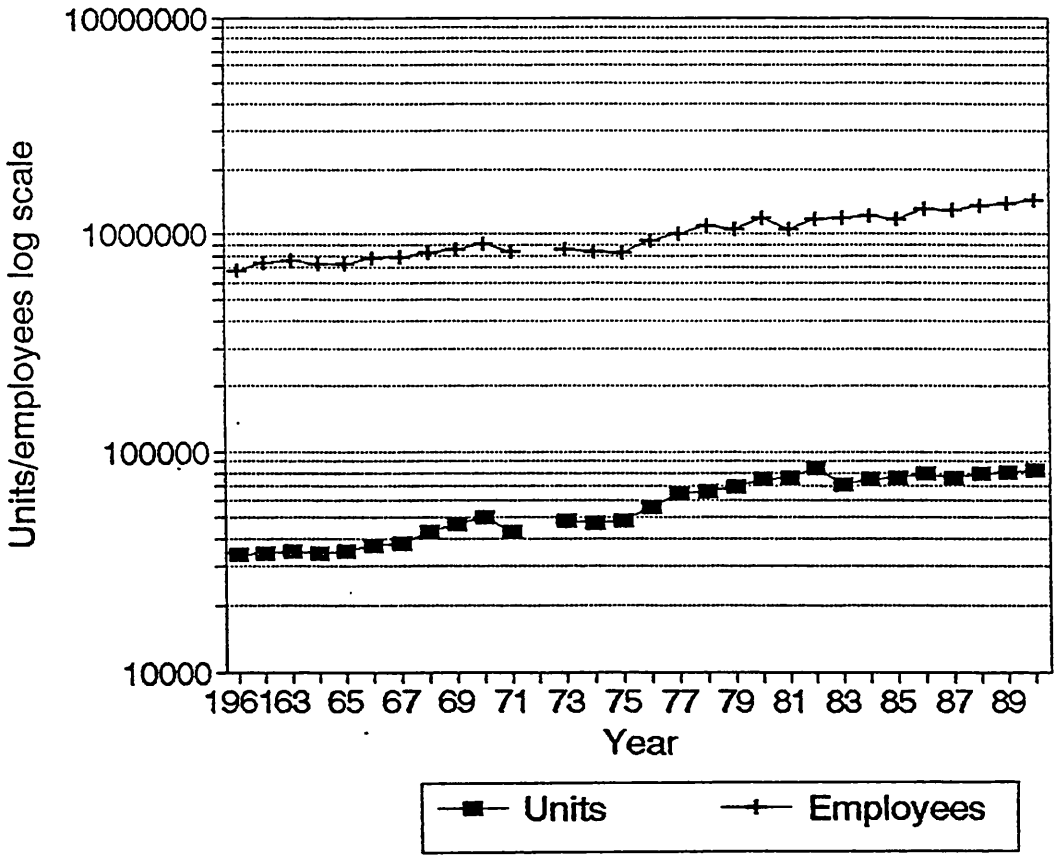
Annual Survey of Industries

The Annual Survey of Industries is the most detailed source of data about India's manufacturing sector. However, coverage in the Survey is limited to those industrial units employing more than 10 workers and using power, or more than 20 workers and not using power; in other words, it covers only 'organised' industries which are required to register with the State Factory Inspectorates under the 1948 Factory Act. In spite of this, the ASI data is the most complete and comprehensive available. There have been changes in the recording of the data - notably the introduction of a new National Industrial Classification of Industries in the early 1970s. This did not affect the reporting of the aggregate statistics, though preparation for the change led to the suspension of publication of all data for 1972 (CSO Annual Survey of Industries 1985/6).

Until 1983/4, the data covered by the ASI were recorded in two parts. The Census sector was a complete enumeration of all industrial undertakings with 50 or more workers, using power; or more than 100 workers without the aid of power. The sample sector data was based on a sample of units employing 10 - 49 workers using power; or 20 - 99 workers and not using power.

The distinction between sample and census sector provides a convenient way of measuring the growth of the small sector within the larger organised sector of manufacturing. The sample sector data is available for the limited period of 1961 to 1982, when publication of separate data ceased (CSO Annual Survey of Industries 1985/6: Introduction). We can however, extend the series to 1989/90

FIGURE 4.2 All-India growth of small factories
Units and employment, 1960/61 - 1989/90



Source: Central Statistical Organisation, Annual Survey of Industries.

NOTE: No data were published for 1972.

by making use of the additional information provided by the ASI since 1973/4. Up to that time, the ASI reported only aggregate figures of employment, number of factories etc, but subsequently it provided a breakdown by size of unit. Figure 4.2 makes use of these two sources of data, and plots the number of units and employment in organised factories with between 10 and 49 employees. Over the period 1961 to 1990 the number of small factories increased by 146%, from 33,657 to 82,646. Over the same period, aggregate employment in these units increased by 110%, from 677,00 to 1.43 million. The rate of growth of employment was not much different from that of the medium and large scale factories which showed an increase of 120% in employment terms over the same period. One cannot infer from this that small factories have done better or worse than the rest of the organised factory sector. The size of the small factory sector at any one time is the result of the interaction between several flows. It reflects both the number of newly established units that fall within the ambit of the Factory Act; the number of previously small units whose growth brings them within the umberella of the Act; and the outflow of units whose growth puts them into the category of medium size factories. The size of the small factory sector is a balance between these three forces. Having said that, the data does indicate that the small factory sector has increased in size, both in terms of the number of units and in terms of employment but not at a faster rate than the medium and large scale factory sector.

National Accounts statistics

The National Accounts statistics provide information about the contribution of the manufacturing sector to national income. Manufacturing is subdivided into the registered and the unregistered sector. 'Registered' manufacturing covers all those establishments that fall within the ambit of the 1948 Factories Act, so it covers all those units which are enumerated by the Annual Survey of Industries.

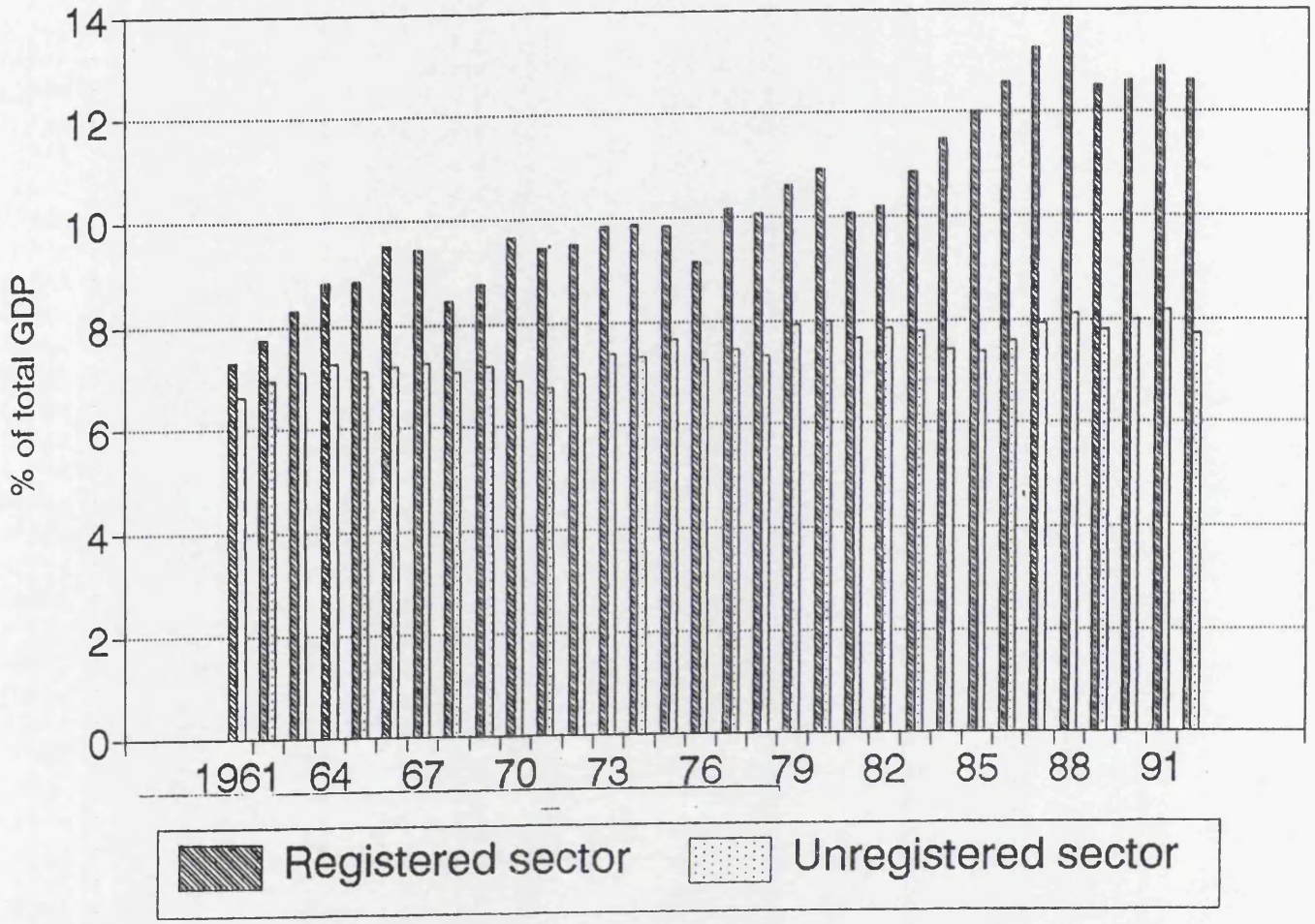
'Unregistered' units are those which do not fall within the scope of the Act. The latter unregistered sector is frequently referred to as the 'small scale sector', while the registered sector is usually described as the factory, or large scale sector.

Figure 4.3 shows income from the registered and the unregistered sector as a proportion of national income for the period 1961/2 to 1992/3. Until the late 1950s, the unregistered sector made a greater contribution to national income than the registered sector. From the early 1960s the registered sector's share has been increasing, and at a faster rate than that of the former, so that by the early 1990s, it was contributing 13% of income compared with 5% in the early 1950s. By contrast, the unregistered sector's contribution has hovered around 7.5 - 8% since the early 1960s. Data relating to value added in manufacturing tells much the same story of the relative decline of the unregistered sector. In 1951, the latter produced some 45% of total manufacturing value added, but that share fell steadily to about a third by the mid 1980s.

Overall the data from the National Accounts suggest that the unregistered sector has performed reasonably creditably. In absolute terms, it has continued to grow, but its share of manufacturing activity has progressively slipped. This is hardly surprising perhaps in view of the greater resources and priority accorded to the factory sector.

Having looked briefly at National Accounts data, it needs to be said that too much faith in them would be misplaced. As explained earlier, most units in the registered sector are required to file annual returns with the Factories Inspectorate so that data in respect of such units is reasonably complete. Unregistered units make no such returns, so the data for this sector is estimated.

FIGURE 4.3 Share of manufacturing in GDP
Registered and unregistered sectors, 1960/61 - 1991/2 at 1980/1 prices



Source: Chandhok (1990) for 1961/1988; Reserve Bank of India Bulletin for 1989/1992.

The Central Statistical Organisation makes use of the National Sample Surveys to estimate value added and output for rural industries; for urban unregistered units, it has in the past used the 1972 All India Census of Small Scale Industry - not a complete coverage of small industry, but limited to those which are registered with SIDO. Using such survey material, the CSO calculates value added and output per employee. From the Census of Population, it then grosses these figures up to calculate national totals. From the benchmark years, chosen to coincide with the Census, the Index of Industrial Production, which is based on production in the factory sector, is then applied to produce estimates for each inter-censal year (Saluja,1988: 68/70). As a method, this is ingenious, but it must be doubted whether the results are reliable or accurate. Even more unsatisfactorily, from our point of view is that the National Accounts data are a composite of the entire unregistered sector. They include not just the modern small scale industries, but also the household and handicrafts sector. The Planning Commission has at various times included a breakdown of the unregistered sector into its various components, but it is based on the same flawed methods.

Census of Population

The final source of data to be considered here is the Census of Population This provides information about employment in the household and the non-household manufacturing sectors. The latter includes the modern small industries as well as the medium and large factories. The Annual Survey of Industries data can be used to decompose the non-household sector into the factory sector - defined as units employing more than 10 workers with power, and 20 without - and the small industry sector. The results are tabulated below (Table 4.1) for India, but for the sake of comparability, excluding Jammu and Kashmir, and Assam.

TABLE 4.1
Workers in Manufacturing by Sector 1961 - 1991.
All-India (excluding Jammu and Kashmir, and Assam)

	1961	1971	1981	1991
Household	7,322,610	4,971,332	5,668,408	6,741,566
Small ind	4,446,098	5,595,164	9,868,356	13,507,247
Large ind	2,738,759	4,230,753	6,046,592	8,142,550*

Sources: Censuses of Population, 1961,1971,1981, and 1991; General Economic Tables provide data on employment in household and non-household industry. Data on employment in the large scale (factory) sector from the Annual Survey of Industries. * data for 1989/90

What this table shows is that small industry as defined grew more rapidly in employment terms than the medium/large scale sector, while the household sector experienced a displacement of employment. Household industry absorbed as many people as the other two groups combined in 1961, but by 1981 it was smaller than either of them. The household sector is characterised by great heterogeneity, and its constituent components have doubtless fared in different ways. The handicraft industries, according to Cable, Weston and Jain, have fared remarkably well, not least in penetrating export markets (Cable, Weston and Jain 1986). But other elements of the household sector seem to depend crucially on State patronage and this is particularly the case with the handloom industry. That dependence on state purchases is vital was borne out by the fate of handloom weavers in Anhra Pradesh, where, in the early 1990s, a government order to purchase uniforms and office linen was rescinded because of complaints about quality. For the weavers, this loss of an assured market was little short of a disaster (India Today, Dec.15,1991).

Comparing the small scale sector with the factory sector, what seems clear is that there is remarkably little difference between them as far as the creation of employment is concerned. Both sectors increased in size by a factor of three over the period 1961 to 1991, although in absolute terms, the small scale sector evidently absorbs more labour than the organised factory sector.

Again it is evident from this data that there have been significant variations in the rate of growth of the small scale sector over time. Between 1961 and 1971, employment increased by 26%; between 1971 and 1981, by 76%; and between 1981 and 1991 by 37%. This pattern of uneven temporal growth of the small scale sector is broadly in line with the observations made above on the basis of examining data for the small organised factory sector. There too growth was faster in the 1970s than in the 1980s.

To carry this analysis a bit further, it is possible to extend the definition of the small sector further, by adding to the sector identified above, the units with up to 49 employees that are enumerated as part of the ASI organised sector. By doing so, 'small' now includes all units employing up to 49 workers. The results are tabulated in Table 4.2. The results of this exercise indicate that the total number of people employed in the small scale sector have tripled over the thirty year period, but the rate of growth has varied, being modest in the 1960s, higher in the 1970s, and slowing again in the 1980s.

These estimates of total employment in small scale manufacturing industries are subject to important qualification. In the first place, there were changes in the definition of 'worker' between the censuses. The most important was the introduction in 1981 of a category of 'marginal' workers, alongside the category

TABLE 4.2
Total Employment in Small Industries with up to 49 workers.

	Non factory, non-household sector (a)	ASI units with up to 49 workers (b)	TOTAL
1961	4,446,098	677,190	5,123,238
1971	5,595,164	837,340	6,432,504
1981	9,868,356	1,179,413	11,047,769
1991	13,507,247	1,426,238*	14,933,485

Sources: Column a: from Table 4.1.
Column b: GOI, Central Statistical Organisation, Annual Survey of Industries.
* data for 1989/90.

of main worker. As it happens the 1981 figures can be adjusted and made comparable with the earlier definitions. For 1991, the sectoral distribution of marginal workers was not available, so the 1991 data refer only to main workers.

A more difficult problem has to do with women workers. The 1971 Census recorded a drop of half in the number of working women. Female labour participation declined from 31.55% in 1961 to 17.1% in 1971. It recovered in the 1981 Census, but to a level below that recorded in 1961. Many commentators believe that there is an inbuilt bias, such that many working women become invisible in the Census volumes (Duvvury 1989; Singh and Kelles-Viitanen 1987; World Bank 1991). Part of the reason is believed to lie in the kind of casual, seasonal, part-time work that many women engage in, which is easily overlooked; and part of the reason lies with the attitudes of mainly male enumerators (Standing n.d.). Whatever the reason, women workers are probably underenumerated in successive Censuses. What effect this has on the estimated total labour force in small industry is difficult to say. What the

Censuses do reveal is that relatively few women work in the small scale sector. But whether that reflects reality, or whether it reflects the invisibility of women's contribution to the small scale sector is basically unfathomable.

To conclude, we have looked at various sources of data relating to the growth of the small industry sector. In one way or another, they all have flaws, so that it is simply not possible to present anything approaching an authoritative conclusion. The Planning Commission itself has recognised the difficulties of attempting any assessment of Government policy with an inadequate database. The issue, it has to be said, is by no means confined to India. Few countries can be said to have a uniform and comprehensive system of collecting data about small enterprises. Compounding the problem is the existence of various ways of defining 'small'. In India, small is defined either in terms of investment or employment. And in relation to employment, it is possible to define small in any of a number of ways. Of the various sources considered, the Census and the ASI together provide the most comprehensive view of the industrial sector as a whole, and its constituent parts. The drawback of such data is that it provides a snapshot of the situation at widely spaced time intervals.

On the basis of the Census data combined with the ASI data, we estimate that employment in the small manufacturing sector, defined as those units employing fewer than 49 workers grew from 5.1 million in 1961 to 14.9 million in 1991, a total growth of just short of 10 million. In absolute terms this is a large figure, and compares well with the growth of employment in the medium and large scale factory sector. The latter, excluding small factories increased from 2.1 million in 1961 to 6.7 million employees in 1991, an increase in absolute terms of 4.6 million. However, these figures need to be seen in the context of a doubling of the total population between 1961 and 1991 (from 439 million to 844 million),

and an increase of 65 million in the number of men between the ages of 15 and 59 for the years 1961 and 1981 (Census of Population 1961,1991). In other words, whatever progress has been made in increasing the number of job opportunities in the small scale sector, the hopes entertained in the 1950s have not materialised. The small scale sector has grown, but its growth falls far short of the need for productive employment.

A critique of policy

We noted above that there are considerable difficulties attached to assessing just what role government policy has played in the growth of the small manufacturing sector. It is conceivable that small manufacturing would have grown in the absence of a specific policy for its promotion, but ultimately, it is impossible to determine what might have happened. We can however examine some of the criticisms that have been levelled at the operation and implementation of the policy as one way of assessing its contribution. Broadly, the criticisms of the Small Industry Policy is that it has been inadequate, wasteful and in some respects counterproductive to the generation of employment.

The charge of inadequacy has been levelled at two aspects of the policy - the provision of technical and marketing expertise, and the provision of credit. Vepa has noted that the quality of technical expertise offered by the Small Industries Service Institutes has tended to deteriorate. The information they provide is "not always up-to-date; market intelligence and demand data are non-existent (Vepa 1988:44). Similarly Taub and Taub's study of small manufacturing in various states led them to identify "the lack of trained advisors as a real and continuing problem in the implementation program" (Taub and Taub 1989:34). The second aspect of inadequacy relates to the provision of credit. It has long been recognised that limited access to credit, both for working capital and for long

term investment monies, are major hindrances to small firms. Indeed, the lack of access to credit is a major factor leading to closure. Steps have therefore been taken to make credit available at concessional rates, and while the flow of credit has increased, it continues to fall far short of need. The recent Nayak Committee report estimated the demand for credit from the small scale sector during the Eighth Plan period as amounting to Rs 9950 crores. The Small Industries Development Bank, the principal source of credit, has quantified its likely contribution over the same period as Rs 4000 crores, leaving an unsatisfied demand, conservatively estimated, at Rs 5950 (Reserve Bank of India 1994: para 4.11) . The shortfall of credit, by no means a recent phenomenon, means that the number of units able to take advantage of financial assistance is low in relation to the total number of small scale units. It tends, according to Patvardhan, to be the smaller units which are most disadvantaged by the system, and which are therefore less likely to reach their full potential (Patvardhan 1988:255).

It is of course to be expected that in a country where resources are scarce that there will be difficulties in meeting all demands for credit. But the criticism of inadequate financial backup has to be seen in the light of the second set of criticisms of the policy, which allege that the programme has been in some respects wasteful of public money. A specific criticism here directs attention to the indiscriminate provision of excise concessions, sales tax exemptions and other forms of subsidy. Essentially the criticism is that such concessions and subsidies are granted to all registered small units regardless of their need for such help, and regardless of their contribution to generating employment or to other social aims. Such a uniform treatment of small manufacturers may be justified on grounds of administrative simplicity, or on grounds of some concept of fairness and equity, but one of the consequences of this unselective approach is that scarce public funds are wasted "on the wrong types of small industry" - that is

the types of industry that do not contribute to the growth of employment (Sandesara 1988: 651). Indeed, indiscriminate assistance may simply be a means of supporting units which are otherwise unviable.

A particularly criticised element of the policy which involves the waste of public funds concerns the industrial estates programme. There are now more than 1000 industrial estates all over India. The programme consumed a fifth of all public sector outlays on the small manufacturing sector during the Second and Third Plans, falling to a still considerable 16% of the total in the Fourth, and 12% in the Fifth Plan (Nagaiya 1989). The evidence suggests that by no means all of this substantial public sector investment has borne fruit. In particular, estates in rural areas have performed poorly (Vepa 1988:82). A number of such estates are either non-functioning, or at best partially occupied, vindicating the Ford Foundation team's verdict over thirty years ago, that "industrial estates alone cannot overcome locational disadvantage" (GOI, Ministry of Industry, 1964: 10).

The ambitious and costly industrial estates programme also provides an example of how the Government's small industry programme can be counterproductive. Sandesara cites a number of studies of the economic performance of units located on industrial estates, with those outside them. The evidence shows that units located off industrial estates have tended to perform better than those located thereon (Sandesara 1988: 649). The main reason for this apparently perverse effect of policy seems to be that estate-located units benefit in the short term from subsidised rents, but thereafter, rents tend to rise, undermining their profitability and hence their growth potential.

Sandesara's study of the efficacy of Government incentives and concessions, conducted for the Industrial Development Bank of India, revealed other ways in which aspects of the policy can be counterproductive (Sandesara 1982). Cheap credit, for example may encourage firms to acquire relatively sophisticated equipment at the expense of jobs. In his study of assisted and non-assisted units in Bombay, Hyderabad and Jaipur, Sandesara was able to show that units taking advantage of Government financial assistance

> "had higher labour productivity, higher surplus per worker and higher average wage than (non-assisted) units, and (non-assisted units) had higher profitability, higher capital productivity, higher surplus per unit of capital, and lower capital-intensity than (assisted) units" (Sandesara 1982: 105).

This suggests that the provision of assistance to small units in the form of cheap credit encourages the greater use of machinery at the expense of employment creation, a prospect that is encouraged by the absence of any mechanism to link the provision of credit to employment creation.

A further important area of criticism of Government policy relates to the programme of product reservation. Reserving a number of items for exclusive production by small scale units has been an important element of policy, providing a safe haven where the small man would be free to operate without fear of competition from larger enterprises. It is not clear how and why some products have been reserved, but the criticism of this protective device is that it may encourage "too many cooks in the kitchen" (Sandesara 1982: 112). That is, it may encourage a relatively large number of units to be set up to produce reserved items, with the result that by creating extreme competition among such units, the programme actively creates the very conditions of limited viability that

the policy seeks to combat.[2] Indeed, a comparison of units producing reserved and non-reserved items shows that the latter increased their output faster over a three year period, both in aggregate and in individual branches of industry (GOI, Ministry of Industry, Development Commissioner, SSI 1992: Table 38). On this evidence reservation appears to be a further example of the way that particular policy tools can have counterproductive results.

This review of the shortcomings and criticisms of the small industries policy has highlighted some of the ways that it falls short of its own declared objectives of creating employment, promoting dispersal and contributing to the ability of small manufacturers to becoming self-supporting and competitive. That a disturbingly large number of small firms are neither competitive nor self-supporting is suggested by the increasing incidence of sickness in the small scale sector. A sick unit is defined as one in receipt of financial assistance but which has either not made a profit in the previous twelve months and/or has been unable to service the loan. Basically a sick unit is one that is unable to generate a surplus over a reasonable span of time. The number of such units has increased substantially, from 58,000 at the end of 1982, to 240,053 by 1988 and 245,575 by March 1993 (GOI Ministry of Finance 1994: 109), or 15% of all registered units. Between them these units have total outstanding arrears of Rs 11533 crores (ibid). Some of these units may ultimately be rehabilitated, but the potential loss of resources and of employment is, as Vepa points out, something that India can ill afford (Vepa 1988: 117). Sickness is by no means confined to the small scale sector, but has been a growing problem among medium and large

[2] As it happens this criticism, while valid in some instances, can be exaggerated. Only a small proportion of units in the small scale sector produce reserved items. Of the 200 leading products produced by the small scale sector in 1987/8, only 48 were reserved (GOI, Ministry of Industry, Development Commissioner, SSI 1992: 110). What this suggests is that the programme of reservation is largely redundant

organised enterprises (Anant and Goswami 1995). There are any number of reasons why organised firms find themselves in financial difficulties and end up by being taken over by the public sector, but their plight is not helped by certain institutional rigidities. The Urban Land (Ceiling and Regulation) Act of 1976, for example, effectively prevents firms from raising finance by disposing of surplus - and often valuable - land, while the 1947 Industrial Disputes Act in effect gives State Governments powers of veto over the retrenchment of labour (Mathur 1989). Such considerations do not apply to the small scale sector. The increasing incidence of sickness among the latter does suggest that the lengthy process of assessing and sanctioning loans to the small scale sector is not as thorough as it could be.

In conclusion, we have looked in this chapter at two related issues. First we examined the growth of small manufacturing in India over the period since the 1960s. Employment has grown, but its growth has been uneven over time. The contribution that government policy has made to this growth is not easily determined, but the criticisms made by a number of authors do suggest that the policy measures, while undoubtedly helping some units, may also have had a variety of perverse and counterproductive effects. One of the most basic criticisms of the policy has been its apparent failure to place a sufficiently large emphasis on creating a viable small manufacturing sector. The operational aim of the policy seems to have been to encourage the establishment of as many small units as possible, without regard either to their prospects in the medium term, or to the productive contribution they can make to the economy as a whole. Such is the consequence of the indiscriminate manner in the which the policy has been implemented.

CHAPTER 5. THE MACRO-ECONOMY: FROM SELF RELIANCE TO LIBERALISATION

The previous chapter looked at the growth of the small scale sector over the period since the early 1960s. That this sector has grown is beyond dispute, but the role which government policy has played in encouraging that growth is open to question. An equally, if not more important factor may have been the evolution of the macro-economy over the past few decades. In this chapter we look at the broad development of the industrial economy, and consider how the general economic and political environment has affected the small scale sector.

The Indian government set out consciously in 1948 to transform the economy. It aimed above all to promote the growth of a self-reliant, capitalist industrial economy. Bearing in mind "the full dimensions of the planning and developmental problems faced by India in the 1950s" (Bhagwati and Desai 1970: 500), the industrial economy can lay claim to considerable achievements (Ahluwalia 1988: 151). The industrial sector is larger and more diversified than it was at the time of Independence (Table 5.1) and self-sufficiency has been achieved in a wide range of industrial products, including capital goods (Ahluwalia 1988:151). The World Bank, in spite of certain misgivings, has also recognised that

> 'India's industrial policies have had a large measure of success in accomplishing some of the country's fundamental development objectives. High protection of domestic producers, large scale government investment, and widespread controls and incentives have interacted to encourage the development of a sector that produces a broad variety of products, that is increasingly regionally dispersed, and that has given the country considerable self-reliance" (World Bank 1989: 186).

On the debit side, the overall growth rate of the economy has been 'disappointing" as Bhagwati has recently pronounced (Bhagwati 1993: 39). Except for the

TABLE 5.1
Selected measures of growth of industrial production, 1950/1 to 1991/2

Output: M tonnes	1950/1	1960/1	1970/1	1980/1	1991/2
Steel	1.04	2.39	4.64	6.82	14.33
Coal	32.3	55.2	76.3	119.0	243.8
Cement	2.7	8.0	14.3	18.7	51.7
Oil	0.3	0.5	6.8	10.5	30.4
Index of industrial production 1980/1= 100	18.3	36.2	65.3	100	212.4

Source: GOI, Ministry of Finance, 1994: Table 0.1

Seventh Plan, industrial output has consistently fallen short of Plan targets (Ahluwalia 1993). Per capita income remains low, increasing from Rs 1127 in 1951 to Rs 2167 in 1991 (GOI Ministry of Finance 1994: Table 0.1). Poverty remains endemic, compounded by a failure to meet basic needs of access to safe drinking water, electricity and basic literacy (Basu 1993; Sen 1989; World Bank 1989).

One view of India's apparently poor performance is associated with a group of right wing, neo-classical economists, including Jagdish Bhagwati and T .N. Srinivasan. Based on the premise that economic growth is the essential means to combat poverty, Bhagwati has since the 1970s, argued that the root of India's problems lay in an excessively regulated, planned economy (Bhagwati and Desai 1970). Extensive controls over production, investment and trade are held to have stifled efficiency and growth (Bhagwati 1993: 46). The over-protected industrial sector is characterised by high costs, which in turn have militated against export

success, with the result that not only has India been denied gains from trade, but more particularly,

> 'the inward-orientation (of the economy) in drastically impairing India's export performance, simultaneously prevented the build-up of labour intensive exports and hence a favourable impact on wages and employment and therefore ceteris paribus on poverty as well (Bhagwati 1993: 61).

The 'control infested system' of the 'license-permit-quota Raj' has thus impeded growth, but that is by no means the end of the story, for bureaucratic controls have also bred corruption of the political system by 'diverting resources into unproductive rent-seeking activities' (ibid.: 56). Time, effort and resources are devoted to seeking trade and industrial licences and their potential windfall gains, encouraging expensive lobbying and the bribing of politicians and bureaucrats who control access to such licenses. Buchanan's public choice theory, which was originally developed to explain "log-rolling" and "pork-barrelling" in the USA, is also called into play by Bhagwati and Srinivasan in explanation of a further element of unproductive activity (Srinivasan 1985). Public choice theory (or 'the economics of politics') applies the assumptions of neo-classical economics to those who hold positions in the state apparatus. Thus, just as producers and consumers are assumed to be utility maximisers, so politicians and bureaucrats will also seek to maximise their utility, with the inevitable result that the former will embrace vote-catching, populist policies, and the latter will embark on empire-building (Buchanan 1978:17). This combination of populist political policies, an increasingly bloated public sector, and competition for scarcity rents adds up to a diversion of scarce resources into what Bhagwati describes as 'directly unproductive activities' (Bhagwati 1982).

The implication of this position is that all forms of government intervention inevitably lead to economic distortions: to inefficiency, waste, and stagnation. Whereas in the 1950s and 1960s, the state was seen, naively perhaps, as a benign

institution, promoting development in the interests of all, by the 1980s, the state was being projected as a predatory anathema (Shapiro and Taylor 1990; Toye 1993: 133 - 150). In India, as in the West with its own problems of slow and erratic growth, a resurgent neo-classical political economy offered an analysis of what was wrong, and a proposal for what needed to be done. The problem lay in a Leviathan state, and the solution to slow growth, stagnation and poverty lay in rolling back the state in favour of greater reliance on the market.

The neo-classical critique is undoubtedly right in emphasising the way that some forms of regulation can have perverse effects, but as John Toye observes, it does not follow that all forms of regulation are inherently bad (Toye 1993: 100). Rather, as he goes on to argue, there is a need for "selective, intelligent intervention" (ibid.: 100). For our purposes however, the major defect with the neo-classical critique is its abstracted quality. In its quest to demonstrate the superiority of market forces, its approach is "ahistorical and timeless" (Shapiro and Taylor 1990: 866).

Of greater interest is the very considerable body of material that shows the uneven growth of Indian industry in the period since the beginning of the Second Plan. It is generally accepted that industrial growth was fairly rapid from 1956 to the mid-sixties, after which growth decelerated significantly, eventually picking up in the early 1980s (Figure 5.1). The reasons for stagnation over the period 1965 to the late 1970s/early 1980s have been endlessly explored, and a variety of views have been offered (Harriss, 1989). Among the more important contributions to the debate are those by Ahluwalia, whose careful analysis leads her to the conclusion that stagnation was the result of several factors - the slow growth of agricultural incomes which retarded demand; the slowdown in public investment, especially in infrastructure; poor management of the infrastructure; and finally the

industrial policy framework, which à la Bhagwati discouraged efficiency and provided little incentive for cost reduction (Ahluwalia 1985:168).

Economic Stagnation

The slowdown in public investment after 1965 seems of fundamental importance (Bardhan 1984: 23). Given that public sector industry provided the bulk of basic raw materials as well as energy supplies for the rest of the industrial economy, the slowing of public investment had severe repercussions on the whole economy. Steel production rose from 1.5 million tonnes in 1950 to 6.4 million in 1965 but then stagnated. By 1975 output was 6.7 million tonnes, and only began to increase substantially toward the end of the Fifth and the beginning of the Sixth Plan in the late 1970s. The slowdown inevitably led to a similar slowdown in private manufacturing investment (Bardhan 1984: 24). The shortage of basic inputs was compounded by the decline in real terms in infrastructural investment, and especially in railways. The growing shortage of railway wagons, combined with lack of maintenance, created transport bottlenecks which further adversely affected both the industrial sector, and the whole economy (Ahluwalia 1985: 76 ff.).

The downturn in public investment in industry and infrastructure needs to be examined in its broader context, both of specific and unpredictable conjunctures, and in the context of the way that attempts to develop the economy unleashed powerful social and economic changes. Defeat at the hands of China in 1962 led to a doubling of the defence budget, and subsequent wars with Pakistan in 1965 and 1971 encouraged a further diversion of resources to military use. On top of this, India suffered serious droughts in 1965 and 1966, and again in the mid-1970s requiring costly relief programmes. To add to the country's difficulties, the United States of America, the main aid donor, suspended aid flows following the 1971 conflict with Pakistan, only restoring it in 1978 (Lipton and Toye 1990: 82).

These exogenous factors help explain the decline of public investment in industry and infrastructure. Adopting a conservative attitude to public finances, the diversion of finance to defence and increasingly to agriculture automatically implied a reduced share for other budget heads.

The experience of drought focused the minds of the planners on the need to correct the neglect of agricultural production. In the Second Plan, agriculture's share of total plan outlay was 11.7%, rising only modestly to 12.7% in the Third Plan, but subsequently its share grew significantly - to 17.2% in the Fourth Plan, and together with investment in irrigation, the total outlay on the rural sector amounted to 24% of the Fourth Plan total (Rao 1993: 258). As is well known, the approach to increasing agricultural production involved encouraging farmers to make more intensive use of land through the technology of the Green Revolution, backed up by a system of administered prices and subsidised fertilisers (Rao 1993: 225). In the medium term, this helped India to achieve self-sufficiency in foodgrains by the late 1970s, but in the meantime, agricultural performance continued to be problematical.

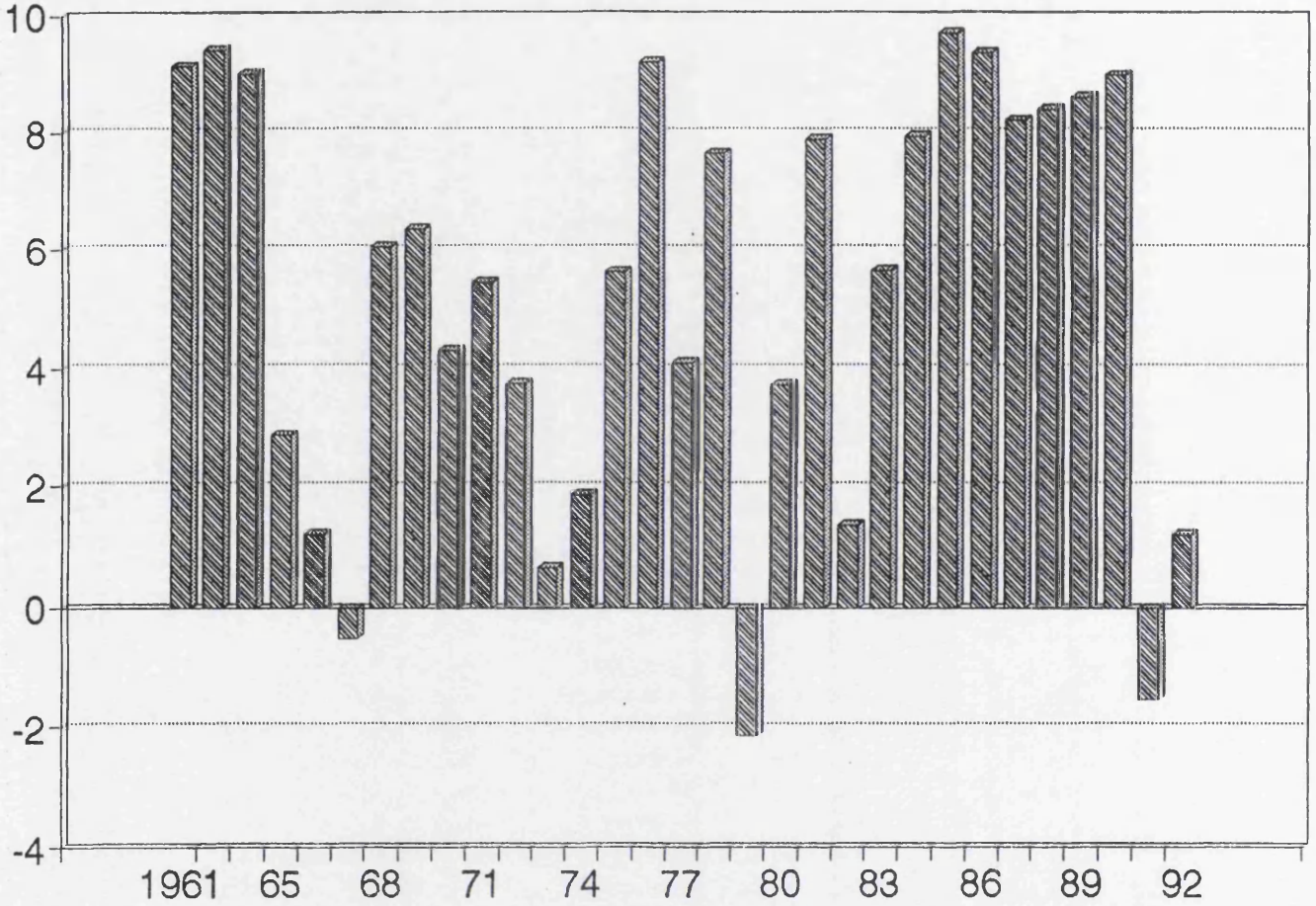
The recurrence of food shortages in 1972/3 and 1974/5, on top of the first oil crisis, pushed inflation upwards in an economy already suffering stagnation. Stagflation precipitated growing labour militancy, political unrest, and growing disillusionment both with the planning process, and after Nehru's death in 1964, with the Congress Party (Stern 1993: 208). Its hegemony both at the Centre and even more so in the State Legislative Assemblies was being undermined, and one-party rule was replaced by a more competitive party politics (Vanaik 1990: 77 ff.). In the 1972 elections, Mrs Gandhi sought to reassert Congress hegemony, by appealing, through the slogan of Garibi-hatao (abolish poverty) to the poor, the marginalised and the dispossessed. Her 20 point programme and the proliferation of anti-poverty programmes, while by no means unjustifiable, added a further twist

to the pressure on public spending. As the economic and political situation continued to deteriorate in the wake of food shortages and rampant inflation, Mrs Gandhi's declaration of a state of emergency in 1975/77 was intended both to secure greater discipline among industrial workers, and at the same time to silence all opposition by the simple device of the prison system (Brass 1994 :42/3).

Growth in the 1980s

With the ending of the Emergency, the Congress (I) suffered a disastrous defeat at the hands of the electorate, and was replaced by the Janata government. The Janata coalition showed itself no more capable of dealing with India's underlying economic problems, and soon disintegrated, paving the way for the return of Congress (I). In the aftermath of his mother's assassination, Rajiv Gandhi scored a major triumph at the polls in 1984 largely on the basis of an electoral platform to liberalise the economy. Changes were introduced reflecting the disillusion that had been growing within the Congress (I) at the state directed industrial strategy. Under Gandhi, there was a relaxation of the licensing and regulatory controls over industry (small factories more than 30 miles from an urban area, for example, were exempted from the need for an industrial license, and among large firms, controls over the level of production were significantly eased), tax rates on individuals and companies were reduced, and access to imported technology was made easier (Echeverri-Gent 1990). The hope was that a shift towards encouraging private enterprise would stimulate the economy, and indeed, industrial growth rates rose significantly, at an average of over 8% from the mid-1980s (Figure 5.1). This is all the more remarkable bearing in mind that the 1980s was a period when the rest of the world was mired in recession and economic turmoil. Ironically, as the pressure for further liberalisation was increasing within India, the International Labour Organisation was pointing out that India's strong performance in the 1980s was mainly attributable to its inward looking economic strategy which had insulated the country from global pressures (ILO 1989: 27).

FIGURE 5.1 Manufacturing output, 1960/61 - 1991/2
Annual percentage change



Source: Calculated from Chandhok (1990) for 1960/1988;
GOI, Ministry of Finance for 1988/1992

The changing policy environment may have contributed to the improvement in industrial performance in the 1980s, but a more significant factor was the increase in public investment. Ahluwalia suggests this began in the late 1970s, with increased investment in infrastructure which continued in the Seventh Plan of 1980 - 1985, and helped to alleviate the transport bottlenecks as well as providing a stimulus directly and indirectly to output (Ahluwalia 1988: 153). It is generally believed that in the course of the expansionary 1980s, the number of middle class consumers in the countryside and the city increased substantially. Stern, remarking on this embourgeoisiement of the population, refers to a middle class of 85 - 170 million people (Stern 1993: 5). Others estimate it at between 150 and 250 million (The Economist October 28 1989; The Guardian February 25 1995), while yet others believe these estimates to be grossly inflated. A Director of US-based drugs company Merck, Sharp and Dhome estimated the Indian middle class at 10 - 20 million (The Hindu, September 10 1991). Whatever the figure, there is little doubt that production of consumer durables has been increasing, further stimulating industrial expansion. Car production for example, hardly changed between 1970/71 and 1980/1, rose dramatically from 49,000 in 1980/81 to 221,000 by 1991, helped by increased foreign collaboration (D' Costa 1995: 488). Production of motor cycles and scooters also increased from 447,000 to 1.84 million (GOI Ministry of Finance 1994: Table 1.31). Consumption of other consumer durables - watches, radios and TV sets has also grown rapidly, with "the biggest consumption boom taking place in rural areas" (The Economist 1994).

Increased spending by government enabled public investment to grow, but a growing share of government spending has been directed towards subsidies. The Green Revolution created a class of 'rich' farmers who have benefited from higher administered prices, heavily subsidised fertilisers, cheap irrigation and free electricity. But as Kothari has argued, the very process of development which has benefited some groups, has also marginalised others, spawning local grassroots

movements which threaten the legitimacy of the system (Kothari 1988 : chapter 2). In response, successive governments have found it prudent to respond to the growth of poverty by means of relief measures (Brass 1994: 295 ff.), food subsidies (said by one source to be equal in volume to the enormous fertiliser subsidy in the mid 1980s (Stern 1993:7)), and by expanding the coercive apparatus of the state (Kothari 1988: 30 ; Brass 1994: 364).

Overall, the quantum of subsidies appears to have grown rapidly since the late 1970s. Mundle and Rao have attempted to quantify the total of both explicit subsidies (fertilisers, food) and those that are implicit (where goods and services are provided at less than cost) arriving at a figure of Rs 42,324 crores or 15% of GDP in 1987/88 (Mundle and Rao 1991: 1172). They point out that by far the largest proportion of this subsidy is invisible, so that it is not at all clear who benefits, or whether the subsidies are mis-targeted.

In effect, and particularly with the growth of a more competitive electoral system during the 1970s, the demands on government spending have grown. While governments have sought to pander to electors through populist policies, they have also been subject to growing pressures from below - pressures which are difficult to resist in a democratic polity. But while spending has grown, governments have found it increasingly difficult to raise the necessary revenue. Both the rural rich, and the growing urban middle class have shown themselves averse to taxation, with the result that a large share of revenue comes not from a progressive system of taxation, but from a regressive system of indirect taxes on consumption. By the mid-1980s, the Centre's revenue was not sufficient to cover even its current spending, let alone contribute towards public savings. In the 1960s and 1970s, the fiscal deficit was low, amounting by the mid 1970s to 4% of GDP, but then rising to 6.3% in the first half of the 1980s and to 8.2% in the second half (Nayyar, 1993: 640). Spending has increased but this increase has not been

matched by proportionate increases in revenues, hence the growing deficit and as the deficit has grown, government has increased its borrowings, both at home and from foreign sources, and the servicing of this debt has eaten further into government revenues.

Crisis and Liberalisation

By 1991, India was caught up in a severe economic crisis. External debt rose from $19.3 billion in 1980/1 to $84 billion in March 1991 (GOI Ministry of Finance 1994). With the collapse of the Soviet bloc, India lost its single most important export market which had accounted for 20/25 % of exports, but more serious still was the fall out from the Gulf War. The flow of remittances from workers in the Gulf states, which had helped to reduce India's fragile trade balance, collapsed, while oil prices rose, squeezing the country's foreign exchange reserve. By June 1991, reserves stood at an all time low, and India came close to defaulting.

The quid pro quo for assistance from the IMF and the World Bank was that the Government adopt a wide ranging reform of the economic system. This liberalisation of the economy has involved the reform of trade policy, such that tariff levels and other restrictions on imports are being progressively reduced, and controls over foreign investment have been relaxed, opening the economy up to the rest of the world. To reduce the fiscal deficit, attempts have been made to cut subsidies - although the proposed ending of fertiliser subsidies has been scaled down because of fierce rural opposition - and a programme of (partial) privatisation of nationalised industries has got under way. Industrial policy has also been reformed. Licensing has been abolished for all but a small group of industries[1] where, for reasons related to "security, and strategic concerns, social reasons, hazardous chemicals and overriding environmental reasons, and items of

[1]These cover coal, oil, alcohol, sugar, tobacco, asbestos, wood, hides, paper/newsprint, defence equipment, drugs, hazardous chemicals, entertainment electronics and white goods

elitist consumption", licensing will continue (GOI New Industrial Policy, 1991(a): para 2.1 (i)). The number of industries reserved for the public sector has been reduced to armaments, atomic energy, coal and lignite, mineral oils, mining, and railway transport.

The general thrust of policy is spelled out in the Eighth Plan (1992 - 1997), which states that much greater emphasis will be given to promoting industrial development through private initiative, and to that end the main aim is to concentrate on the provision of the necessary infrastructure of power, transport and communications (GOI Planning Commission 1992: Foreword, vol. 1). These are the major areas where the government hopes to encourage foreign investment, thereby helping to promote India's future development.

The changes introduced through the liberalisation programme have been broadly if not enthusiastically welcomed by most business and industrial leaders in India (India Today, November 15 1993). If there are misgivings, it is over the speed of the reform process. To the extent that part, if not all, of Indian industry is relatively uncompetitive in both price and quality, there needs to be a period of gradual adjustment in order to avoid large scale deindustrialisation and to allow Indian industry to be able to compete on more equal terms with foreign competitors both within India and abroad. The main political parties also appear to have accepted liberalisation, though again in some cases with reservations about some elements of the programme. The nationalist Bharatiya Janata Party, for example, while not totally opposed to the opening up of the economy to trans-national corporations, has revived the old slogan of "swadeshi" (goods made in India) in opposition to Coca-colonisation. The left, including the trade unions, which initially opposed liberalisation as a sell-out to Western imperialism seems to be coming round to the view that, to coin a phrase, there is no alternative (India Today, February 15 1994). The collapse of the Soviet Union and China's embrace

of market reforms have helped to hasten the apparent triumph of neo-classical economics, but what shape this New Economic Order will assume and who benefits from it, remains to be seen (Biersteker 1992). What can be ventured is that some classes, some countries, regions and localities may well benefit from increasing global integration, but the imperatives of a market-driven global system will lead other countries regions and localities to lose out.

Liberalisation and the Small Industry Policy.

While major changes are slowly being introduced into the economy, the Small Industry Policy has so far remained largely intact, though with a slight shift of emphasis. The 'Policy measures for promoting and strengthening small, tiny and village industries' as a complement to the 'New Industrial Policy', emphasises the need to 'add vitality and growth impetus to the small scale industry sector' (GOI, 1991(b): para 1.2). Much of this statement is a reiteration of previous official pronouncements about the necessity of upgrading technology, and supporting marketing initiatives, now with an added stress on export promotion.

There are two main areas of the new policy which portend important departures from past policy. Under the new system, subsidised/cheap credit is to be withdrawn "while at the same time ensuring an adequate flow of capital to small manufacturing". Present indications are that the Priority Bank Lending Scheme, under which banks are required to reserve 40% of their lending to agriculture and the small scale sector, will be radically reformed. The Committee on Financial Sector Reforms is believed to be likely to recommend that the scale of the scheme be considerably reduced, and applicable only to the agricultural sector (Small Industries Development Bank of India 1995: 149). The small manufacturing sector thus faces the prospect of confronting a free market in credit. Whether this will benefit small scale industry must be in some doubt.

The second new departure is the identification of a role for industry associations. In the past, it was the government and government agencies which were seen as the principal vehicles for promoting small industry. For the first time, this policy document suggests that industry associations should take on responsibility for quality counselling and testing. These two points are developed slightly in the Eighth Plan document, which makes the points that, in relation to the small scale sector

> "Greater emphasis will be laid on private initiative in industrial development. The public sector will become very selective in the coverage of activities and in making investment" (GOI, Planning Commission Eighth Plan, Volume 2: para 6.3.2).

and

> "Industry associations will be encouraged to form marketing organisations which, besides marketing, will go into the quality aspect of products" (ibid: para 6.4.11).

There is here an evident shift towards greater self-help by individual entrepreneurs and by their collective associations. It would seem that the state is beginning to relinquish its felt responsibility towards the small scale sector and embracing a greater role for market freedoms. In line with this, it is generally believed that it is only a matter of time before the programme of reserving items for exclusive production in the small scale sector is formally abolished (India Today, December 31 1993). In late 1995 the government announced a complete review of the policy for small manufacturing industry in the light of the general liberalisation of the economy and the shift to global integration, but with an election pending in 1996, it could be some time before the final shape of a new policy emerges.

CHAPTER 6 ECONOMIC CHANGE AND THE SMALL MANUFACTURING SECTOR.

In this chapter, we will consider how the broad changes in the macro-economy have affected the growth and development of the small scale sector. The latter has largely been excluded from the discussion of industrial growth rates in India which has centred on the performance of the large scale factory sector.

There are of course, several ways in which the small scale sector may have been affected by the uneven pattern of growth of the economy generally. In the first place, growth of the small scale sector is likely to be affected by the supply of raw materials and of machinery from the large scale sector, as well as through the opportunities for subcontracting from, and supplying the large factory sector. Secondly, the macro-economy may exert an important influence through the medium of consumer spending and consumer demand.

The general thrust of the evidence presented in chapter 5 was that industrial growth rates slowed significantly for most of the 1970s, as a consequence of which many raw materials were in short supply, compounded by logistical problems created by transport bottlenecks. One would expect these problems to have a damaging effect, both on the expansion of existing small units, as well as on the establishment of new units By contrast, the 1980s was a period of expansion, when raw material supplies eased considerably. On top of this the growth of incomes and consumer demand was, on the evidence, more rapid in the 1980s than in the previous decade. We would then expect to find a more rapid growth of small manufacturing in the more buoyant 1980s, than in the stagnant 1970s.

The evidence assembled in the previous chapter suggests a contradictory pattern (Table 6.1). Defining the small scale sector as those small firms in the factory sector employing 10 - 49 workers, the data shows that employment grew more

rapidly, in absolute and relative terms in the decade 1971/81 - roughly the period of industrial stagnation - than in 1981/91 - roughly the period of greater buoyancy. In the period 1971/81, employment grew by 40.9%, and in the following decade by half that amount, 20.9%. Similarly, employment in the non-factory, non-household sector - essentially units employing fewer than 10 workers - also showed faster relative and absolute growth in the 1970s, with an absolute increase of 4.3 million workers (a 76% increase), while in the 1980s, the absolute increase was a more modest 3.6 million workers, a percentage increase of 37%.

TABLE 6.1
Employment in manufacturing industry, 1961 - 1991

	Non-factory non-household	% change	ASI units up to 49 employees	% change
1961	4,446,098		677,190	
1971	5,595,164	+25.8	837,340	+23.6
1981	9,868,356	+76.4	1,179,413	+40.9
1991	13,507,247	+36.9	1,426,238	+20.9

Sources: as for Table 4.2

What the data suggest is that small manufacturing has behaved in a countercyclical fashion, with larger increases being registered in a period of industrial and economic stagnation, and more modest increases when the rate of industrial and economic growth picked up. It is a result that seems entirely counterintuitive, but it is one endorsed by Kashyap, who argues that in India, small firms do poorly in times of prosperity, and well in times of declining demand (Kashyap 1988: 670). What is not at all clear, and what Kashyap fails to explain is why this should be the case.

Superficially at least, the finding that small manufacturing behaves in a countercyclical way is not entirely at odds with experience elsewhere. It may be unusual when compared with the experience of much of Western Europe in recent times, where growth of small firms has been associated with periods of general expansion; but in parts of the Third World, recessionary conditions appear to have encouraged the growth of 'informal' manufacturing. Dawson's study of Ghana, for example, shows how the collapse of the formal manufacturing sector has prompted a shift into 'informal' manufacturing enterprises, while Schmitz has also tended to link economic crisis with the resurgence of small scale industry (Dawson 1991; Schmitz 1989: 24/27). In the case of India, while there were serious economic difficulties in the 1970s, these were hardly comparable with the "economic crisis of unprecedented proportions" which many parts of Africa and Latin America experienced in the 1980s (Ghai and de Alcantara 1990: 389).

Rather than accepting the Kashyap hypothesis, it may be useful to examine the growth of small manufacturing over the period since the early 1970s in a bit more detail. The data provided in Table 6.1 are aggregate figures for the small manufacturing sector as a whole, and such aggregates may conceal as much as they illuminate. One of the characteristics of the small manufacturing sector is its considerable heterogeneity, and there is no reason to assume that all branches of small industry will grow at the same pace. An examination of the structure of the small sector may provide some clues as to the uneven rate of growth over time. In this connection it is worth pointing out that Ahluwalia's analysis of the progress of the large scale industrial sector points out that low rates of growth in the 1970s were not uniformly characteristic. The slowdown in growth was most marked in the basic metals and capital goods industries, while the agro-based industries showed no sign of a deceleration in growth rates (Ahluwalia 1985: 25). On that basis, we hypothesise that a large part of the growth in the small scale sector in the 1970s was in those branches of industry linked to the rural economy, while those

branches of the sector reliant on inputs from the large factory sector would have grown at a more modest rate, but exhibiting higher growth rates in the more favourable circumstances of the 1980s.

Testing this hypothesis is difficult because of the lack of suitable data. The Annual Survey of Industries provides a very detailed breakdown of the structure of the whole factory sector, but the data is not disaggregated by size of factory, so nothing can be said about the structure of the small factory sector. The only available sources of data which shed some light on the structure, and changes in the structure, of the small scale sector are the two Censuses of Small Scale Manufacturing carried out for the reference periods of 1972 and 1987/88. These are not particularly appropriate reference dates for the purposes in hand, but in the absence of suitable alternative data, there is no alternative. Table 6.2 shows the main characteristics of the small registered sector by major product groups (Sandesara 1993: 225).

TABLE 6.2
Growth of small registered manufacturing by sector, 1972, 1987/88

Main group	1972			1987/88		
	% of units	% of employment	% of production	% of units	% of employment	% of production
Food/ textiles	10	13	12	24	22	30
Metals/ electrical	49	43	48	25	30	33
Other	40	42	39	35	42	35
Services	1	2	1	15	7	2

Source: Sandesara (1993) Table 5.

What the table shows is that over the period 1977 to 1987/88, growth of units, employment and production was largely concentrated in the food and textiles group. A more detailed breakdown of changes reveals that employment in the

food/beverage industry increased by 267%, while employment in the small textile sector (which includes hosiery and ready made garments) increased by 163% (Sandesara 1993: 225). By contrast, the number of units, level of employment and of production increased much more slowly in the metals/electricals group. Employment in basic metals increased between the two Censuses by 24%, machinery and parts by 92%, transport equipment by 20% (ibid.: 225).

Some caution needs to be exercised in interpreting figures, because the definition of a registered small unit changed between the two reference dates. In 1972, a small units was defined as one with fixed investment of less than Rs 75,000, and by 1987/88 the limit had risen to Rs 350,000. Some of the increases may thus have come about purely because of changes in definitions. However, as Sandesara points out, the magnitude of the changes particularly for the food products and textiles sectors do suggest real growth, while the modest figures for the metals and electricals group suggest that in spite of the upward revision of the qualifying limit, growth was much slower.

There are of course several plausible explanations of this picture of differential growth in the small scale sector. One possibility is that the food/beverages group grew more rapidly because of easier entry conditions than in other sectors. The detailed data reported in the Second All India Census of Small Manufacturing does not entirely bear this out. Investment in plant and machinery per unit in the food sector is recorded as Rs 8000 compared with Rs 9000 in the beverages group (GOI, Ministry of Industry, Development Commissioner SSI 1992: Table 20). By comparison, per unit investment in the engineering sector is significantly higher at Rs 18000. However, within the engineering sector, the largest number of small units is in the metal products division where investment per unit is Rs 8000, the same as for the food/beverages group. Differing conditions of entry may have played some role in the faster growth of some sectors, but it appears

from this evidence not to afford a complete explanation of the observed pattern of growth of small manufacturing.

Among the alternative explanations is that differential growth of the small scale sector has been influenced by the wider macro-economy. From the early 1970s until the mid 1980s, the growth of employment was concentrated in that part of the small scale sector most closely associated with the rural, agricultural economy. Conversely, as we hypothesised, those elements of the small scale sector associated with the large factory sector - the metal working, engineering and electrical sectors grew more slowly, being constrained by raw material shortages, as well as transport difficulties and the slow growth of consumer demand during a period of stagflation. Our hypothesis would lead us to expect a more rapid growth of the latter groups in the 1980s as the economy generally picked up. That this expectation of higher growth rates of employment in the 1980s is not reflected in the data may be attributed to the intervening influence of several other factors. First, it needs to be borne in mind that while there was a marked improvement in industrial output from the early 1980s, the lag effect of new investment implies that the availability of raw material supplies did not begin to significantly improve until the mid 1980s. Steel production, vital for small engineering units, remained flat from the mid 1970s until the mid 1980s, after which production of finished steel began to rise. This suggests that the stimulus of an improving macro-economy was delayed and only began to have an effect on the growth of the engineering sector in the second half of the 1980s. There is some evidence to support this; as we shall see later, in the city of Coimbatore, there was an increase in the establishment of new units in the engineering sector in the course of the 1980s, and especially after the mid 1980s.

The condition of the macro-economy may help explain the apparently slow growth of the engineering and metal-using division of the small scale sector through the

1970s and into the 1980s, but it does not offer an explanation of why employment grew more rapidly in the 1970s than in the subsequent decade. One possible contributory factor is increased capital intensity. It might be hypothesised that over time, the small scale sector has become more capital intensive, and has been able to increase capacity utilisation, at the expense of employment generation. There is some evidence for this for the small factories covered by the Annual Survey of Industries, which shows that fixed capital per employee has been rising, together with value added and value of output, and most markedly since the early 1980s (Table 6.3). It seems a plausible argument that the

TABLE 6.3
Changes in structural ratios, small factories

% change	1974/79	1979/84	1984/90
Value added per employee	18.7	84.6	122.7
Fixed capital per employee	38.0	83.2	119.5

Source: GOI, Central Statistical Organisation, *Annual Survey of Industries*

deceleration in employment creation during the 1980s has little to do with the countercyclical nature of small manufacturing; rather, small manufacturing has grown considerably in value-added and output terms, while employment growth has lagged behind reflecting technological progress and the adoption of more modern labour conserving production methods. While the evidence for this is strictly limited, it does afford an intuitively more satisfactory explanation of the observed pattern of growth than that favoured by Kashyap.

In conclusion, what light does this shed on the role of government in promoting the growth of small manufacturing? There is a tendency on the part of government agencies to suggest that policy has been a success, and is vindicated

by the way that employment and output have increased. The argument we have tried to develop here is that growth in these parameters is more the result of general economic conditions than of the specifics of policy. Broadly speaking, the measures associated with this policy were in place by the mid 1960s. No major policy initiatives have been implemented since then. What changes have come about, such as the extension of reservation have been largely cosmetic, and largely immaterial inasmuch as the reserved industries account for a relatively small share of the sector generally.

Against the more or less constant policy frame, the performance of the small scale sector in employment terms has been variable over time. The analysis in this chapter has attempted to relate that performance to the general development of the economy. Disaggregating the small scale sector into its broad component parts suggested a pattern of differential growth of employment. The relatively poor performance of the engineering sector was explained in terms of the constraints imposed by the general slowdown of industrial production in the 1970s, as compared with the better performance of the agro-processing industries which were presumably less affected by limited availability of raw material inputs. It was suggested furthermore that the slower growth of employment in the 1980s might be understood in terms of increasing capital intensity, itself perhaps a reflection of the improved availability of modern machinery from the large scale sector. It has to be admitted that in putting forward these hypotheses, we are considerably hampered by the lack of availability of appropriate data to test them, but it remains plausible to argue that growth has been more strongly conditioned by the development of the economy in general than by specific government policies for the small scale sector. It does not follow from this that government policy is irrelevant. The development of the economy in general has, of course, been strongly affected by general economic policy, but it is to suggest that the role of the Small Industry Policy as operated hitherto has been less important than the

general management of economic affairs. And indeed, bearing in mind some of the criticisms of the way the policy has been operated, then it may in some respects have held back stronger performance in the field of employment generation. In particular, the lack of any linkage between the provision of subsidised credit and employment creation may have encouraged the tendency to increased capital intensity at the expense of labour absorption.

CHAPTER 7. THE GEOGRAPHY OF SMALL MANUFACTURING INDUSTRY IN INDIA

Previous chapters have concentrated on employment growth in the small manufacturing sector, reflecting the high priority attached to that particular objective of the Small Industry Policy. A second aim behind the policy of promoting small industry was that it would help to achieve the more general objective of "balanced development of different areas in the country" (GOI Ministry of Industrial Development, Development Commissioner SSI 1973: 16). Balanced development can be, and has been interpreted in one of two ways. It can mean reducing imbalances between different regions, or reducing imbalances within regions, between urban and rural areas. In India, the small industry policy has been seen as a means of contributing to both of these aims. It has been seen as a way of helping to reduce interregional disparities, and at the same time helping to promote rural development through employment creation.

In the 1950s and 1960s, planning in India was more concerned with sectoral than spatial planning. In the course of the 1970s, the commitment to regional balance came to the fore (Mackie 1983: chapter 3). The Pande Working Group was established by the Planning Commission in 1968 to consider the means and criteria for identifying "backward" areas, while the Wanchoo Working Group looked at ways of overcoming backwardness (Menon 1979: 43). "Backwardness" was essentially defined in terms of areas possessing little industry, and the solution to backwardness was to provide incentives in the form of subsidies for industry to locate in such areas. The National Committee on the Development of Backward Areas, set up under the Planning Commission was explicit about the role of small industry in helping overcome backwardness, noting that

> "... in the early stages of development (of backward areas), the small industry is likely to be the major activity at least for local entrepreneurs. Hence the

> promotion of small industries in these areas is paramount" (GOI, Planning Commission 1981: 64).

The incentives made available in the backward areas were seen as the means of attracting medium and large scale factory industry away from the more developed areas, while at the same time, those same incentives would encourage local entrepreneurial development, and this would contribute to a process of regional convergence and balance. As it turns out, the proposals of the Working Groups were subverted by political objections. Originally, backward areas were conceived of as backward states, but objections from the Chief Ministers of the more developed states led to a revised scheme, in which some 246 districts were deemed backward, including less developed districts in the more developed states (Menon 1979: 53).

In addition to their perceived role as helping rectify regional imbalance, small scale industries have also been seen as having a prominent role in reducing rural/urban disparities. Encouragement of small manufacturing in rural areas would help, so it was believed, to reduce the problems of "unplanned urbanisation" (GOI, Industrial Policy 1956: para 13). By contributing to rural development through the creation of employment and income, small industry would reduce the flow of migrants to the cities, and thereby alleviate the pressures on cities.

The question that arises is how realistic is it to pin such hopes on a programme of rural industrialisation? There are strong theoretical arguments which cast serious doubt over the prospects of small industry development programmes being of any significant benefit to rural areas in the circumstances of a late developing country. There are two issues here that need to be addressed, the first being agglomeration, and the second being the marked rural/urban disparity in infrastructural facilities.
In an earlier chapter, we noted that there is a strong tendency for small manufacturers to concentrate together in space in order to benefit from

localisation economies. The clustering of firms either in the same, or in related industries creates the conditions for what Schmitz describes as 'collective efficiency' (Schmitz 1989: 27). Clustering in effect creates the scale economies more usually associated with the single large enterprise. The difference is quite simply one of boundaries. The large firm is, as we said earlier a factory within a wall, whereas a cluster of small firms can collectively function as a factory without walls. Each individual unit within the cluster can benefit from its closeness to and its association with other units. Each benefits from reduced distribution and assembly costs, while the greater information flows that proximity creates will add to growth prospects. Increased output for the cluster as a whole implies increasing demand for each individual unit, allowing productivity to rise and unit costs to fall.

Clustering or agglomeration, is thus an important feature of the industrial landscape, but clustering in turn tends to be associated with specific environments, and most especially with cities. This is because the urban environment affords another set of benefits in the form of urbanisation economies. The tendency for industry to concentrate in cities reflects not only the advantages which cities offer to capital in the form of local linkages, but also because of the easier availability of basic services of power connections, access to communications, banking facilities and the like, and not least ready access to a large pool of labour. These are basic facilities whose existence cannot be taken for granted in rural India. James Berna tells an instructive tale about how he

> "met the owner of a newly established textile mill for whom supply of skilled labour had become a grave problem. A town fifteen miles from Coimbatore had been chosen as the site for the mill. Although it had been in operation for only a few months, the proprietor had already come to the conclusion that he had made a serious mistake. All his skilled workers had been drawn from other mills in Coimbatore. Besides having to pay them extra money for travel to and from the city, he reported that absenteeism was much higher than it normally should have been, with serious detriment to production" (Berna 1960: 96)

That such difficulties persist is borne out by the more recent experience of firms in the industrial growth centre of Hosur, Tamil Nadu. Located in a backward rural area, employers found themselves having to import semi-skilled, skilled and supervisory staff from Bangalore 40kms away (Mackie 1983: chapter 6). In an unevenly developed economy, cities afford significant external economies which are important for large industry; the 1977 legislative ban on new large scale industrial development makes the point. Small and medium enterprises are not so restricted, and external economies are likely to continue to draw such activities to large urban centres (Harris 1991: chapter 3). McPherson's study of small (service and manufacturing firms) in four Southern African countries demonstrated that rural firms are much less likely to survive than those in urban locations, and the reasons are not difficult to discern (McPherson 1995). As we noted in chapter 2, small firms are faced with particular problems; they have neither the resources nor the expertise to be able to search out suppliers and customers, nor do they have the resources to train their own labour. A location in a large industrial centre may, therefore, be particularly advantageous and appealing. Cities, and most particularly those with a sizeable industrial base offer greater potential and greater opportunity for setting up small units, while the higher level of incomes - for some sections of the population at least - generated by industry and commerce implies higher demand for and higher consumption of goods. Not only are urban industrial areas more likely to afford larger industrial and consumer markets, with opportunities for subcontracting but, as both cause and effect of their development, they are more likely to be able to offer better support and infrastructure facilities, and a pool of trained labour. And in turn, that pool of trained labour may become the basis for the growth of small entrepreneurs. By contrast, villages, small towns and even those cities with a weakly developed industrial base provide fewer opportunities and less support, and will tend therefore to be a less fertile seedbed for growth.

What this line of argument suggests is that small industry will tend to agglomerate, and such agglomerations will typically be concentrated in cities. And to the extent that cities, especially industrial cities are themselves likely to be geographically unevenly distributed between regions, we should expect small manufacturing to show a similar uneven regional distribution. In what follows, we attempt to test these two propositions: that at the regional scale, the distribution of small scale industry is positively related to the level of industrialisation and urbanisation; and secondly, that within regions, small industry is likely to concentrate into urban centres, and particularly the larger urban industrial centres.

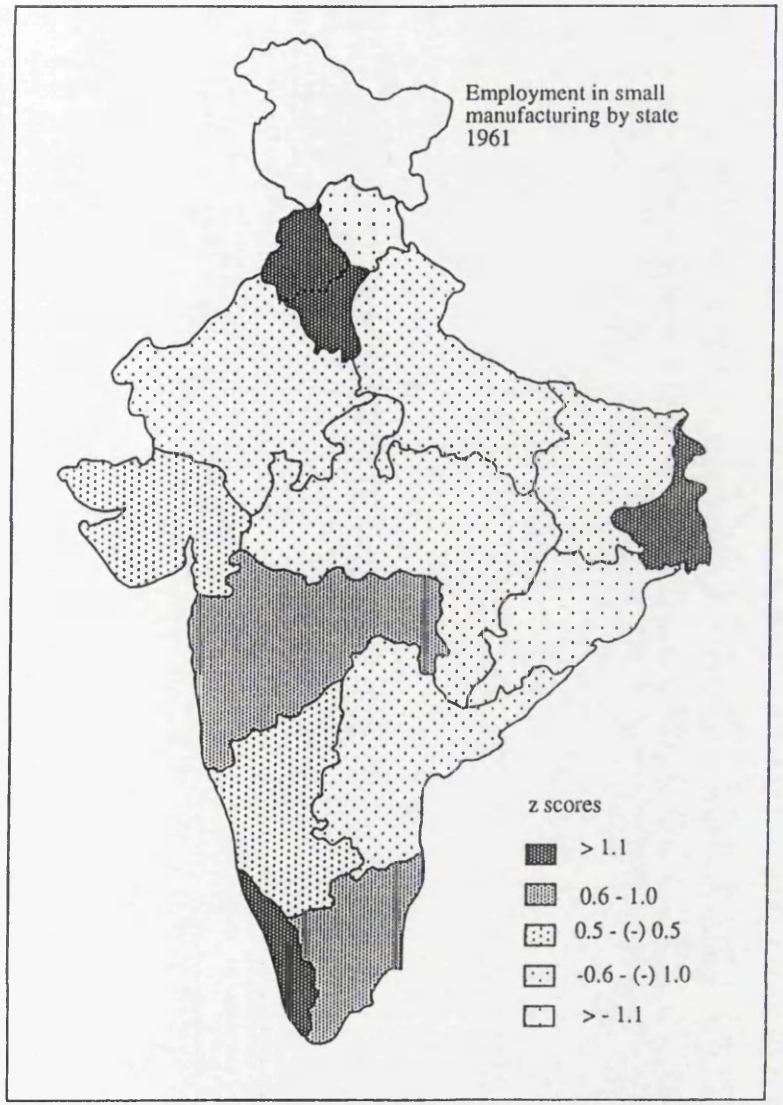
Small manufacturing at the regional scale

The proposition to be tested is that the more urbanised and the industrially developed regions will support a higher level of small scale manufacturing. What this proposition basically amounts to is that the more developed regions will have a larger share of small industry than less developed regions. The data used in this section is derived from the Census of Population, which provides information on employment in 'non-household industry', and the Annual Survey of Industries, which provides information on employment in the factory sector, defined as establishments employing more than 10 workers and using power, and 20+ workers without power. Subtracting the number of workers in the factory sector from the Census category of employment in 'non-household industry' provides data on employment in what we might describe as the small scale manufacturing sector. This residual category covers employment in establishments with fewer than 10 workers and using power; and less than 20 workers in units not using power.

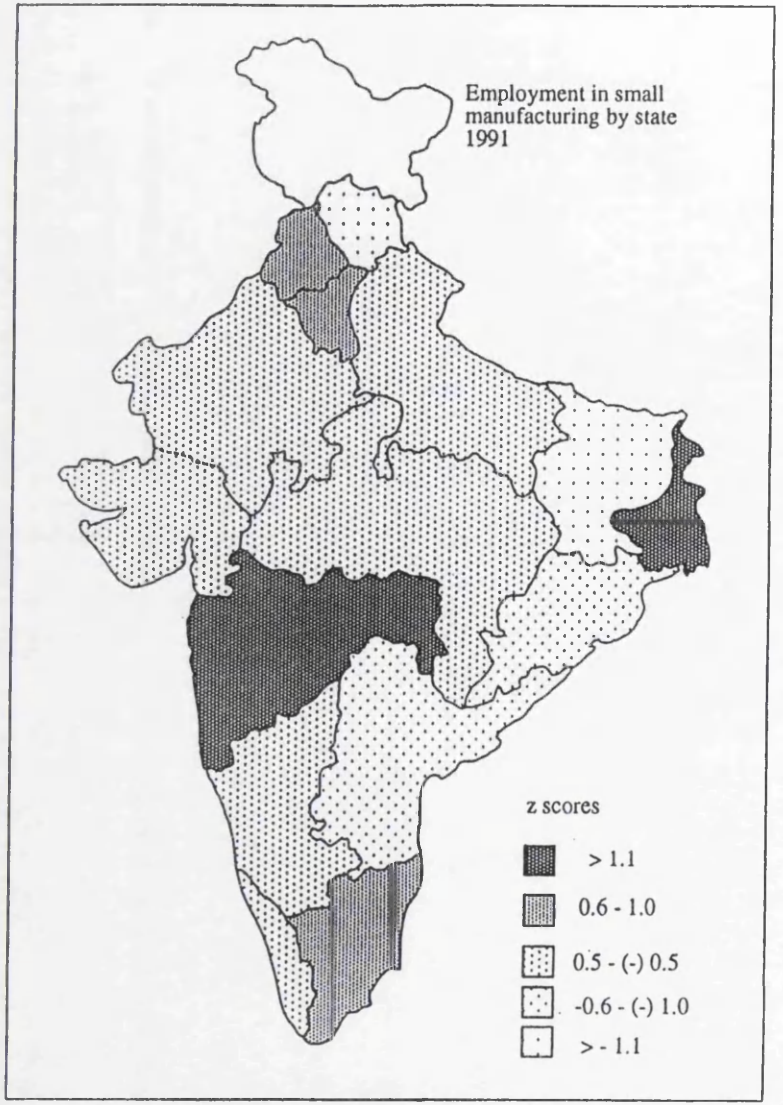
Maps 7.1 and 7.2 show z scores for workers in small industry as a percentage of each state's labour force for the years 1961 and 1991[1]. Together the fourteen states accounted for 93.5% of all employment in small manufacturing in 1991. In 1961, the states with the highest proportions of employment in small industry were, in order, Kerala (6.7%), West Bengal (6.4%), Haryana/Punjab (6.1%), Tamil Nadu (5.4%) and Maharashtra (5.1%). By 1991, these five states continued to lead, but the relative positions had altered, so that Maharashtra had a larger share of its labour force in small industry than any other state (11.3%), ahead of West Bengal with 9.4%, Haryana/Punjab/Delhi (8.4%) and Tamil Nadu with 7.8%. Kerala's position deteriorated significantly, a reflection perhaps of the political and economic climate in that particular state (Thampy 1990).

What emerges from the two maps is that in both 1961 and 1991 employment in small manufacturing industry is unevenly distributed among the states of India. Figure 7.1 compares the proportion of each state's labour force working in small industry in 1961 and 1991 based on z scores which show the data as standard deviations around the mean. The plot shows four clusters of states. The first cluster comprises five states with above average employment in small manufacturing in both 1961 and in 1991. These five states are Maharashtra, West Bengal, Tamil Nadu, Kerala and Haryana/Punjab. These five states accounted for 50.1% of small manufacturing by employment in 1961, and 59.1% by 1991. A second group of two states comprising Gujarat and Karnataka lie just above the mean, while a third group of Andhra Pradesh, Madhya Pradesh, Rajasthan and Uttar Pradesh cluster just below. The final group, comprising the three states of Bihar, Himachal Pradesh and Orissa cluster below the mean on both dates.

[1]No Census data was collected for either Assam or Jammu and Kashmir in 1991, so both have been excluded from the analysis, as have the Union Territories, whose contribution to total smallmanufacturing is negligible. The exception is Delhi, whose small manufacturing sector is substantial, and has been included here with the data for Haryana/Punjab.



MAP 7.1 Z scores of percent employment in small manufacturing by state 1961



MAP 7.2 Z scores of percent employment in small manufacturing by state 1991

While by no means a perfect fit, the pattern seems to suggest a relationship with the general level of development among the states of India. The states with above average levels of small manufacturing employment tend to be the more developed states, while the poorer less developed states lag behind. The proposition that small manufacturing is related to the general level of development among the states can be tested in a simple way by using rank correlation. The states were ranked according to the percentage of the labour force in small industry, and correlated with a ranking of states on the basis of Joshi's index of development (Joshi 1990; 119). The index is a composite measure based on ten separate measures of 'development', including per capita state domestic product, value added per industrial worker, urbanisation, literacy and agricultural productivity. Using this index, the rank correlation for 1961 was 0.84; and for 1981 0.79. These results tend to bear out that there is a strong relationship between employment in small industry, and the general level of economic development of the states.

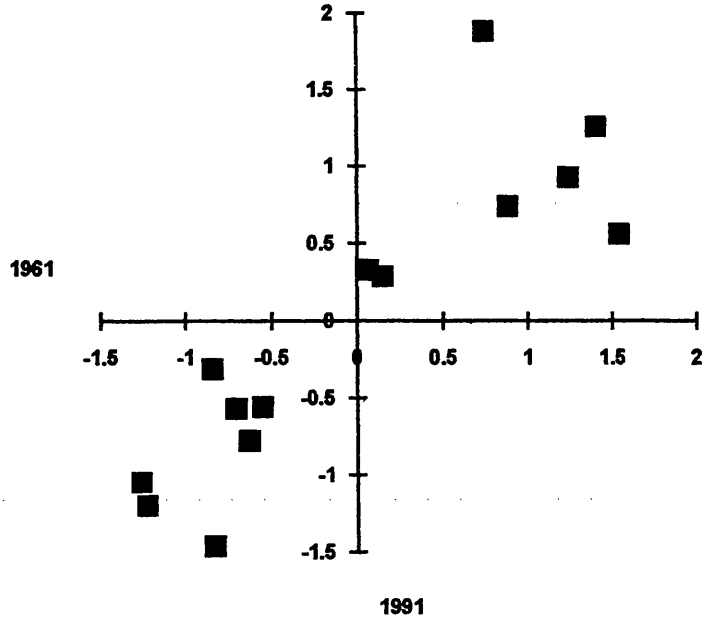


Figure 7.1 Z scores of percent employment in small scale industry by state, 1961 and 1991

We can attempt to carry this analysis further by building a regression model, in which employment in the small scale sector is the dependent variable, and the independent variables are measures of social and economic development. The data used here relates to the states, and is based on the year 1981. The independent variables are shown in Table 7.1.

TABLE 7.1 Independent variables, and Moran's I-statistic

	Moran I
- per capita State Domestic Product as % of All India average (SDP)	[0.08]
- % rural population below the poverty line (rupov)	[0.42]
- % urban population below the poverty line (urpov)	[0.24]
- % labour force in the secondary sector (sec)	[0.12]
- % labour force in tertiary sector (tert)	[0.13]
- % urban population (urb)	[0.08]
- % population literate (lit)	[0.24]
- average food grain yields as % of the All India average (yield)	[0.02]
- infant mortality rate (imr)	[0.26]

Moran's I-statistic indicates low or moderate levels of spatial autocorrelation, except for rupov, suggesting that conventional statistical tests are safe to use (Goodchild 1986). The correlation matrix (Table 7.2) indicates that employment in small scale industry is significantly correlated with three variables - positively with urbanisation and literacy, and negatively with infant mortality - and highly, but insignificantly correlated with employment in the secondary and tertiary sectors. The positive and significant correlation with literacy might be explained in terms of the common link with income and living standards. It is not unreasonable to suppose that where incomes are higher, there will be a greater willingness to support children's education, and conversely where incomes are lower, school attendance may be seen as a low priority.[2] At the same time, higher incomes suggest a larger market for goods, and hence more small industry as

[2] An obvious exception to this is the case of Kerala, where a vigorous government campaign has resulted in near universal literacy. Kerala is however exceptional in this regard.

compared with poorer areas where demand for and consumption will be lower and there will as a consequence be more limited opportunities for small enterprises. Much the same argument would lead us to expect a strong and negative relationship between small industry and infant mortality. The infant mortality rate is a fairly good indicator of 'development', reflecting a variety of influences,

TABLE 7.2 Correlation matrix for Indian States, 1981

	SDP	SEC	TERT	URB	LIT	IMR	YIELD	RUPOV	URPOV	SSI
SDP	1.0000	.0848	.1241	.4554	.1634	-.3552	.5494	-.7153*	-.6846*	.4985
SEC	.0848	1.0000	.2118	.6671*	.1765	-.2592	-.2069	.2071	.1523	.5626
TERT	.1241	.2118	1.0000	.3659	.5470	-.3935	-.0513	.0873	.0945	.5176
URB	.4554	.6671*	.3659	1.0000	.2205	-.3475	.0068	.0142	-.0067	.8168**
LIT	.1634	.1765	.5470	.2205	1.0000	-.7770**	.1608	.0115	.1337	.6205*
IMR	-.3552	-.2592	-.3935	-.3475	-.7770**	1.0000	-.1254	.0071	-.0549	-.6021*
YIELD	.5494	-.2069	-.0513	.0068	.1608	-.1254	1.0000	-.4456	-.1645	.1117
RUPOV	-.7153*	.2071	.0873	.0142	.0115	.0071	-.4456	1.0000	.8944**	-.0517
URPOV	-.6846*	.1523	.0945	-.0067	.1337	-.0549	-.1645	.8944**	1.0000	-.0713
SSI	.4985	.5626	.5176	.8168**	.6205*	-.6021*	.1117	-.0517	-.0713	1.0000

N of cases: 15 1-tailed Signif: * - .01 ** - .001

Sources: Secondary, tertiary employment, urbanisation and literacy from Census of India, 1981
Infant mortality and yield of foodgrains, from CSO *Statistical Abstract*, 1985
Urban and rural poverty from World Bank (1989) *India: poverty, employment and social services*

including the adequacy of nutritional intake, quality of living conditions and the local environment, and the adequacy and accessibility of health care. By and large, states with a high rate will tend on average to be poorer, while those with a low rate are likely to be characterised by higher average incomes and higher consumption levels, and again these may be the conditions which will tend to favour the growth of small industry.

Having explored the correlation matrix, we can now go a stage further, and try to build a regression model, entering variables one at a time on the basis of their statistical significance. In step one, urbanisation (x_{urb}) was regressed against employment in small industry (y), and this yielded the relationship

$$y = 0.11 + 0.24x_{urb}$$

$$R^2 = 0.667$$

with a T value of 5.10, the relationship is statistically highly significant (sig T = 0.0002). In the next step, literacy, as the next most significant variable, was entered into the equation, producing the relationship

$$y = -2.885 + 0.213x_{urb} + 0.0965x_{lit}$$

$$R^2 = 0.871$$

Statistically, the relationship remains highly significant (sig T = 0.0009). For the remaining variables, the F values and their significance levels are too high to justify entering them into the equation, so we end up with a simple regression model, in which literacy and urbanisation are the best predictors of the level of employment in small industry at the scale of the states. And of those two variables, urbanisation is the single most important predictor, accounting for some 67% of the variation in the dependent variable.

A similar analysis was performed for 1961, and this revealed much weaker relationships generally. The regression of small manufacturing employment on urbanisation yields the equation

$$y = 0.240 + 0.1849x$$

$$R^2 = 0.52964 \qquad [\text{Moran I}_{urb} = 0.12 \quad ssi = -0.21]$$

With a T value of 3.376, this is significant (Sig T = 0.003), but the R^2 value is considerably lower than for 1981. The increase in the R^2 between 1961 and 1981 implies a growing concentration of small manufacturing employment in the more developed, more urbanised states.

It is no coincidence that the states with the highest levels of employment in small industry are the more urbanised and industrialised states in India. Maharashtra, West Bengal, Haryana/Punjab/Delhi and Tamil Nadu not only have higher levels of urbanisation, but also a larger share of the urban population in these states is concentrated into Class 1 cities (population of more than 100,00) than in other states (Ramachandran 1989; Fig 5.1, 5.5). Moreover these are the states which contain the major metropolitan centres of India - Bombay; Calcutta, Delhi and Madras - which Misra and Chapman suggest are themselves now focal elements of evolving regional systems of industrial cities (Misra and Chapman 1991)[3]. These states account for 29% of India's total 1991 population, but fully half of industrial output and of value added by factory industry, bearing out Nigel Crook's argument that

> ".. cities are a necessary part of the industrialisation process; they are created by it, and in turn they sustain it" (Crook 1993: 2).

The analysis presented here is that small manufacturing is sustained by an urban location, which affords access to inputs, to markets, to labour and to the general facilities of banking, transport and communication. Cities, in other words, present unrivalled opportunities for the growth of small industry.

This analysis of small manufacturing employment has yielded some interesting results, but it has to be acknowledged that the states which are the units of analysis used here, are very large and very heterogeneous. What we propose to do now is to change the scale of analysis and focus more closely on one particular state.

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[3] It should be noted that the inclusion of Delhi makes a significant difference to the rank of Haryana/Punjab. In 1961, Delhi had half as many workers in small industry as Punjab; by 1991 it had two-thirds as many workers. Excluding the data for Delhi results in Haryana/Punjab registering only slightly more than the national average level of employment in small industry in both 1961 and 1991.

Tamil Nadu

Tamil Nadu is one of the more developed and industrialised states of India. It may lack the resource base of some of the Northern states, but it has developed a sizeable factory sector. On the basis of per capita value added in manufacturing, value of industrial output, and manufacturing employment, the state ranked fourth in 1961 behind Maharashtra, West Bengal and Gujarat. By 1990 it continued to rank fourth behind Maharashtra, Gujarat and Punjab.

Several factors appear to have contributed to the overall growth and diversification of the industrial sector. First, since the 1950s a number of major public sector projects have been located in the State. According to Seth's calculations, in both 1961 and 1971, Tamil Nadu ranked fifth among fourteen states in terms of its share of public sector investment in relation to population (Seth, 1986: 345). By 1981 it had plunged to tenth place, for reasons we will touch on shortly. Such projects have not only had a direct impact on employment, but have also had significant multiplier effects, creating new opportunities for supply and ancillary industries. Secondly, in addition to, and perhaps because of central projects, the state has also benefited from the industrial licensing system, which has directed a stream of private industrial investment into the state. Over the period 1959/66, Tamil Nadu ranked third after Maharashtra and West Bengal in terms of the number of licenses issued for private sector manufacturing investment; and between 1976/1980 it ranked fifth, marginally behind Punjab and Uttar Pradesh (Seth 1986: 346).

A third factor contributing to the growth and diversification of the industrial economy has been the policy adopted by the Centre of imposing uniform delivered prices on a range of basic industrial inputs. Until early 1992, coal and steel have been subject to a regime of equalised prices at depots throughout India (Johnson, 1966: 99) In effect under such an arrangement customers near coal and steel producing sites pay more for their supplies, subsidising more distant consumers who pay less then the 'real' transport costs. The effect of such cross-subsidisation

is that, in India, states which are deficient in coal and steel producing capacity have not been at a disadvantage compared with producing states. On the contrary, consumers in the resource-poor states such as Maharashtra, Gujarat and Tamil Nadu have been able to buy basic inputs at much the same price as those in the major producing states such as Bihar, Orissa and Madhya Pradesh. Pricing policy has provided little incentive for industrial development to take place in these areas; rather investment has been diverted elsewhere and most especially to the major metropolitan centres of Delhi, Calcutta, Bombay and Madras, enabling them, to maintain their dominance in the urban and industrial system (Sita and Chatterjee, 1989).

A further factor which may have contributed to industrial development has been the activities of the State Government itself. The Government of Tamil Nadu has established a number of agencies whose remit is to attract investment by the private sector. Amongst these public bodies are the Tamil Nadu Industrial Investment Corporation (TIIC) whose history dates back to 1948. Today, TIIC is primarily concerned with implementing the various concessional loan schemes funded by the Centre for small scale industries. The Tamil Nadu Industrial Development Corporation (TIDCO) was established in 1965 as a government owned enterprise whose original aim was to lobby for further public sector investment in the state. Since that time, its target has shifted towards encouraging joint projects between the State Government and the private sector. The third important state institution is the State Industries Promotion Corporation (SIPCOT). It has a dual role. On the one hand, it acts as an agent of the Industrial Development Bank of India, channelling concessional finance in the form of cheap loans to medium and large units. It also acts as a promotional body for the State by financing, with Central assistance, the development of industrial estates which cater for small industries, and growth centres which are aimed at attracting medium and large enterprises. There are now some 55 industrial

estates, and seven industrial complexes, with an eighth currently in the early stages of development at Perundurai in Erode District.

The contribution that these state bodies have made to the industrial development of Tamil Nadu is open to question. One of the principal means by which they have attempted to promote development is through offering a range of concessions to industry, both small, medium and large, in the form of cheap loans, and subsidised power tariffs. Such concessional schemes are offered by all the states in India directed particularly at mobile medium and large scale investment projects, with only marginal differences in the level of generosity. The result is that these schemes probably cancel each other out. Any new concession offered by one state is quickly adopted by others, so that no state has anything other than a very short term advantage over its rivals for major new investments.

The factors outlined above, and especially the location of central projects in the state together with the pricing policy for basic inputs helped Tamil Nadu to develop its industrial economy in the decades after Independence. The 1950s and 1960s were a period of sustained growth and diversification but the momentum slowed appreciably from the 1970s. After 1970, there was little change in the structure of the factory sector in the state (Fig 7.3). This reflected the general slowdown and stagnation of India's industrial economy generally. But whereas the Indian economy generally witnessed faster growth in the 1980s, Tamil Nadu's industrial sector has continued to perform sluggishly, with industrial output growing at a rate well below that of India generally (Goldar and Seth 1989; Government of Tamil Nadu, Economic Appraisal, 1991: 136-138;).

This divergence between national and regional economic trends has been examined by Swaminathan (Swaminathan 1994). He argues that compared with other leading states, Tamil Nadu has shown less dynamism and this is attributed to

TABLE 7.3 Structure of manufacturing - the factory sector
Tamil Nadu 1961 - 1987/88

		1961		1971		1981		1988	
NIC	Industry	% employment	% value added	% employment	% value added	% employment	% value added	% employment	% value added
20/21	Food products	6.8	12.6	9.7	8.5	17.7	7.7	14	12.3
22	Beverages and tobacco	0.7	0.5	0.8	0.5	1.5	0.9	1.2	0.9
23/6	Textiles and garments	51.3	43.7	35.4	24	28.1	23.9	29.9	19.3
27	Wood and wood products	1.9	0.4	1	0.3	0.7	0.4	0.7	0.2
28	Paper and paper products	5	4.5	5.4	5	4.3	5.1	4.3	3
29	Leather	1.8	1.3	3.2	1.5	3.7	2.9	4.8	3.2
30	Rubber and plastics	0.9	2.7	1.8	5.5	2.3	3.5	2.7	9.1
31	Chemicals	5.4	5.9	7.7	17.4	9.9	14.3	12.9	12.3
32	Non-metallic minerals	3.2	5.2	3.5	3.6	3.7	3.8	3.8	5.6
33	Basic metals and alloys	3.4	2.3	5.1	4.4	5.8	4.8	3.3	3
34	Metal products	1.9	2.8	2.5	1.1	2.6	2.6	2	1.4
35	Non-electrical machinery	5.5	4.4	5.5	6.7	7.2	11.4	8	13.6
36	Electrical machinery	2.8	2.1	3.4	4.6	2.7	4.4	3.1	3.6
37	Transport equipment	9.2	11.4	14	16.3	9.2	13.7	8.7	11.1
38	Miscellaneous manufactur	0.4	0.4	1.1	0.6	0.7	0.7	0.7	1.5

Source: GOI, CSO,Ministry of Planning, Annual Survey of Industries

the low risk taking capacity of established business in the state, combined with a less aggressive state policy of industrial promotion (Swaminathan 1994: M-64). The evidence for the latter lies in the lower occupancy rates by small and medium units of SIPCOT's industrial estates, as compared with the better record of Maharashtra and Gujarat. There is however, another and perhaps more important point to made about the Tamil Nadu economy. As one of the more developed states, it is characterised by a comparatively well developed infrastructure, except in relation to two vital elements - the state suffers more unreliable and expensive energy supplies, and lacking any major rivers, it is subject to periodic and severe water shortages.[4] Power shortages, voltage reductions and unreliable water supplies are by no means unique to Tamil Nadu. But the state is distinguished by its relatively high electricity tariffs for industrial consumers (Table 7.4), and these in turn reflect the heavy cost to the State Electricity Board of the state government's policy of zero tariffs for agricultural producers (Harriss 1992: 223).[5] The combination of unreliable and expensive energy supplies together with periodic shortages of water are perhaps more potent contributors to the lack of a favourable climate for industrial growth than those identified by Swaminathan.

In the light of these continuing difficulties, it is possible to understand the modifications that have occurred in the late 1980s in the State Government's industrial policy. Until the beginning of the Fourth National Plan (1969/70), the States had limited room to devise their own development plans. State Plans were expected to follow the priorities laid down by the Centre, but from the Fourth Plan, this monolithic approach was modified to allow the States to formulate their own plans, embodying a strategy most suited to their particular needs and

[4]In the autumn of 1993, for example, the State Government commandeered several thousand private water tankers to supply Madras with water from wells up to 100kms away. The water shortage led to serious political disturbances in the city.

[5] In the early 1990s, this subsidy amounted to some Rs 4 billion. Gulati's study of agricultural subsidies by state shows that the financial cost of electricity subsidies was far higher in the states of Maharashtra, Uttar Pradesh and Tamil Nadu than elsewhere (Gulati, 1989).

TABLE 7.4

Electricity tariff for industrial consumers, by state, 1980, 1985

(Paise per Kwh)

Sr. No.	Name of the SEB/U.T./ elecy. deptt.licencesgovernment undertaking	Small industries 5 HP 10% LF (272 Kwh/month)		Medium industries 50 KW 30% L.F. (10950 Kwh/month)		Large industries 1000 KW 50% L.F. (365000 Kwh/month)	
		as on 1.4.80	as on 1.1.85	as on 1.4.80	as on 1.1.85	as on 1.4.84	as on 1.1.85
1.	Andhra Pradesh	39.00	56.84	39.00	55.05	34.77	65.56
2.	Assam	27.00	57.00	26.49	57.00	34.89	55.19
3.	Bihar	46.00	86.00 -	45.22	84.00	46.15	71.28
4.	Gujarat	39.35	65.16	44.07	73.97	41.08	75.44
5.	Haryana	27.60	36.00	27.81	54.16	27.51	53.65
6.	Himachal Pradesh	27.00	34.00	28.13	34.76	23.77	34.00
7.	Jammu & Kashmir	23.00	22.70	22.70	22.70	20.40	20.40
8.	Karnataka	33.53	50.00	34.96	50.00	24.84	44.67
9.	Kerala	16.50	30.77	15.60	22.72	20.10	30.78
10.	Madhya Pradesh						
	a) Urban	28.50	47.50	27.16	58.75	35.22	66.27
	b) Rural	26.00	43.50	-	54.92	-	-
11.	Maharashtra	39.25	43.00	39.25	53.00		
	a) Bombay & Pune					32.81)	74.95
	b) Other areas					)	61.30
12.	Meghalaya	20.00	70.00	19.37	66.85	18.13	48.60
13.	Orissa	27.30	47.95	29.36	54.09	29.47	64.96
14.	Punjab	25.53	37.40	25.16	41.68	22.30	43.17
15.	Rajasthan	27.00	40.00	30.00	55.00	28.49	63.00
16.	Tamil Nadu	34.00	76.00	34.00	76.00	31.06	72.50
17.	Uttar Pradesh	38.76	60.85	37.00	60.85	38.38	70.44
18.	West Bengal	38.50	61.50	57.04	-	43.65	75.91

Source: Sabade, ed. (1987) Table 16.3

development priorities. In Tamil Nadu, industrial policy in the 1970s was essentially undiscriminating. There was little attempt to promote the growth or development of particular sectors, nor even an attempt to assess whether particular types of industry might, in the medium or long term, be better suited and more beneficial to the state's development (Mackie 1983: chap 5). Industrial policy sought quite simply to encourage the continued growth of industries already located within the state, and to attract new enterprises, regardless of their suitability. Confronted by the continuing power difficulties, the State Government has now begun to adopt a more selective approach, introducing a subsidy scheme to attract selected categories of industry, notably electronics, pharmaceuticals, the manufacture of solar energy equipment, and auto ancillaries. The rationale for this shift was spelled out in a report by a working party for the State Planning Commission in preparation for the Eighth Plan (Government of Tamil Nadu, Planning Commission, n.d.). The report concedes that the continuing power problem implies that there is very limited potential for the growth of energy intensive industries, and comes to the firm conclusion that "the major thrust of industrialisation of Tamil Nadu will have to be oriented towards the small scale sector" (p. 7), and in particular it highlights the need to develop small sunrise industries - special chemicals, electronics and scientific instruments - but the question of how such a shift is to be achieved is not addressed. It is a task made more difficult by the fact that Bangalore in the neighbouring state of Karnataka has built up a considerable lead as a centre of high tech industry, aided by the concentration of major scientific institutions and of public sector industries, many of which are involved in defence related work (Singhal and Rogers 1989; 163-65).

The growth of factory industry in the state has been accompanied by and indeed may have helped to foster the growth of small scale industry. Employment in the non-household, non-factory sector rose from some 640,000 or 5.4% of the working population in 1961, to 1.65 million in 1991, equivalent to 7.8% of all

TABLE 7.5 Structure of Registered Small Manufacturing Units, Tamil Nadu and India, 1987/88

NIC	Industry Group	TAMIL NADU % of:			ALL INDIA % of:		
		Units	Output	Employment	Units	Output	Employment
20/21	Food products	15.7	6.6	12.1	16.5	21.8	13.1
22	Beverages and tobacco	1	0.2	2.7	0.6	1.1	2
23/25	Cotton etc textiles	1.3	1.8	1.8	0.5	1.4	1.1
26	Hosiery and garments	6	10.4	9.1	6.8	5.1	5.4
27	Wood and wood products	4	1.4	2.6	9.4	4.4	6.2
28	Paper and paper products	9.2	4.7	6.6	5.7	4	5.4
29	Leather	2.1	16.2	3.7	4.1	2.4	2.2
30	Rubber and plastics	4.9	4	4.1	4.4	5.9	5.4
31	Chemicals	9.8	12.2	21.5	4.4	12.3	8.6
32	Non-metallic mineral products	5.7	2.3	7.2	5.4	4.1	12.1
33	Basic metals and alloys	2.4	8.1	3.2	2.6	10.4	5.5
34	Metal products	10.6	13.6	8	11.3	8.4	10.2
35	Non-electrical machinery	11.5	6.4	7.7	7	5.8	7.6
36	Electrical machinery	2.2	6.7	2.6	2.1	6	3.7
37	Transport equipment	1.5	4.1	1.9	1.9	2.5	2.7
38	Miscellaneous manufacture	1.8	1.1	1.3	1.5	1.8	1.8
97/99	Repair and other services	10.3	0.3	4.3	15.5	2.4	7

Source: Government of Tamil Nadu, Department of Industries and Commerce 1992

Government of India, Ministry of Industry, Development Commissioner, Small Scale Industries, 1992

main workers. The structure of the small sector is revealed by the Census of small industry for 1987/8. It needs to be borne in mind that coverage in this census extends only to units which are voluntarily registered with the State Directorate of Industries and fall within a maximum investment ceiling. Table 7.5 shows the share of units, value of output and employment for the groups of industries recognised in the National Industrial Classification of industries. In terms of their contribution to the value of output, the most important individual branches of industry are leather, metal products, chemicals, and hosiery and garments, which together account for 52% of production. For All India, the pattern is slightly different, with food processing being the principal source of output, followed by chemicals and basic metals industries. Looked at in terms of employment, the picture that emerges is rather different. In Tamil Nadu, two groups dominate, chemicals and food processing, while for All India, the main employment sources in small industry are food processing, non-metallic minerals, and metal products. Rather than looking at individual categories, we can also look at broad groups, and here the importance of 'engineering' (i.e. groups 33-37 inclusive) stands out. In Tamil Nadu, it accounted for only a quarter of employment but almost 40% of output.

The Geography of Industry in Tamil Nadu

We have looked at the development of industry in Tamil Nadu from a general perspective, by way of providing a background to what follows. We now turn to look at the spatial distribution of industry, and especially small manufacturing in the state.

In an earlier section, we examined the distribution of small manufacturing among the states and it was argued there that industrialisation and urbanisation together create the conditions and opportunities for the growth of the small scale sector. We can make use of that proposition in looking at the dynamics of industrial

development within the state of Tamil Nadu. As before the data base remains the Census of Population to provide information relating to each of the districts within the state on employment in 'non-household industry'. The Annual Survey of Industries does not disaggregate its data on factory employment below state level, in order to preserve business confidence. Fortunately, such data is published annually by the Chief Inspector of Factories for each of the districts within Tamil Nadu, and is the data used here. The analysis covers the period 1961 - 1981[6], during which time, the number and consequently the boundaries of the districts changed. For this analysis, we have used the 1981 districts as a base (Map 7.3), and adjusted the 1961 (and 1971) data to conform to the 1981 boundaries. Between 1961 and 1971, a new district of Dharmapuri was created out of four taluks which had previously been part of Salem District. Taluk level data is available in the District Level Handbooks, and using that source it is straightforward to calculate what Dharmapuri's population would have been in 1961. The same method was used to recalculate the data for the two other districts, Pudukkottai and Periyar, which were created between 1971 and 1981. In the absence of taluk-level data, a similar straightforward recalculation of the factory employment data is unfortunately not possible, so it was necessary to guesstimate factory employment for the three new districts. In the case of Dharmapuri, we know that in 1971 it had slightly less than 1% of total factory employment in the state, and we have assumed that it had the same percentage in 1961. Similarly, for the other two new districts that were created, Periyar and Pudukkottai, we have assumed that they had the same share of factory employment in 1961 as in 1981. For Dharmapuri, the assumption we have made is not too outrageous - the district was, and indeed largely remains backward, with little industry, and what industry it does have has come about through the creation

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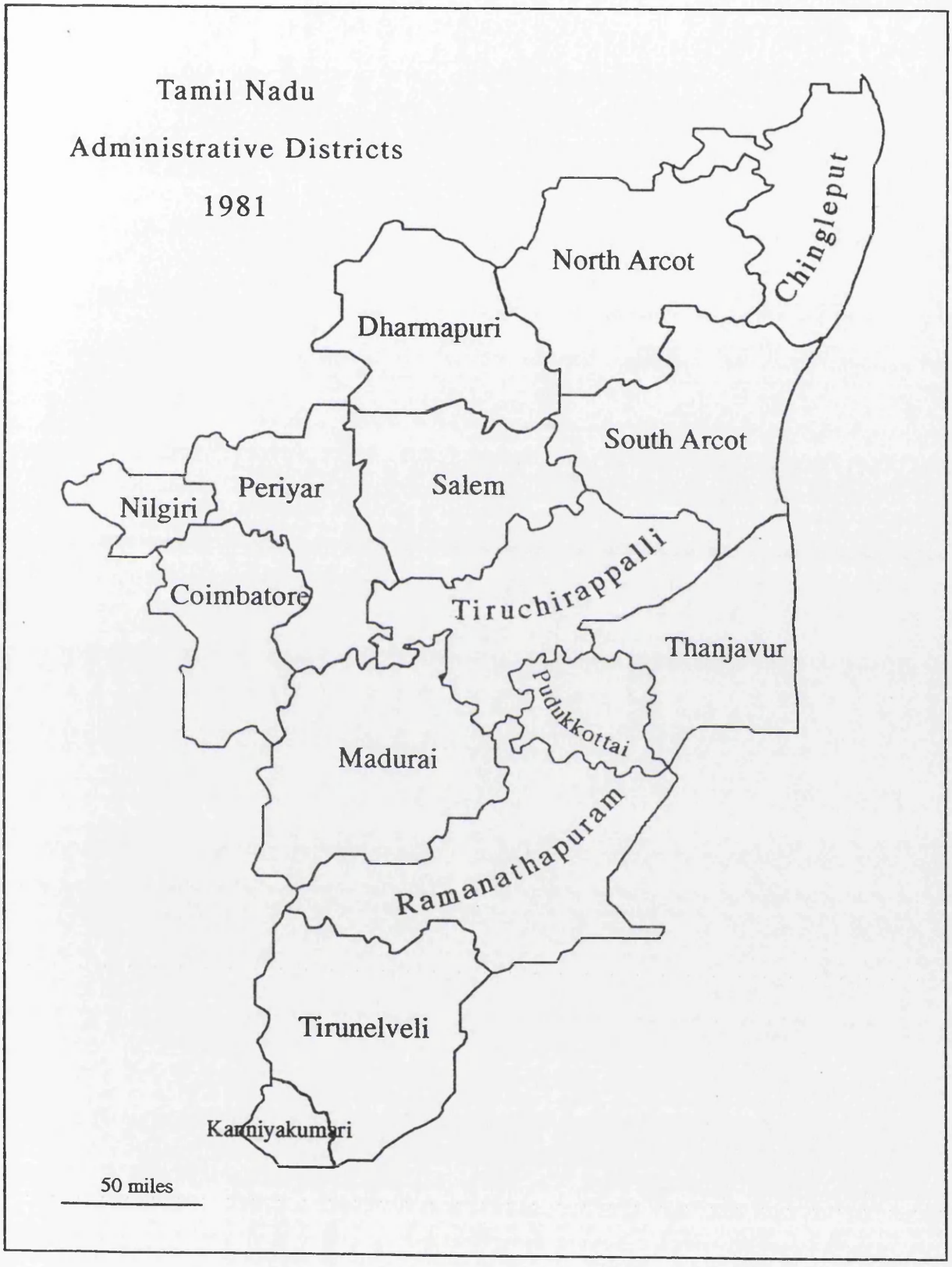
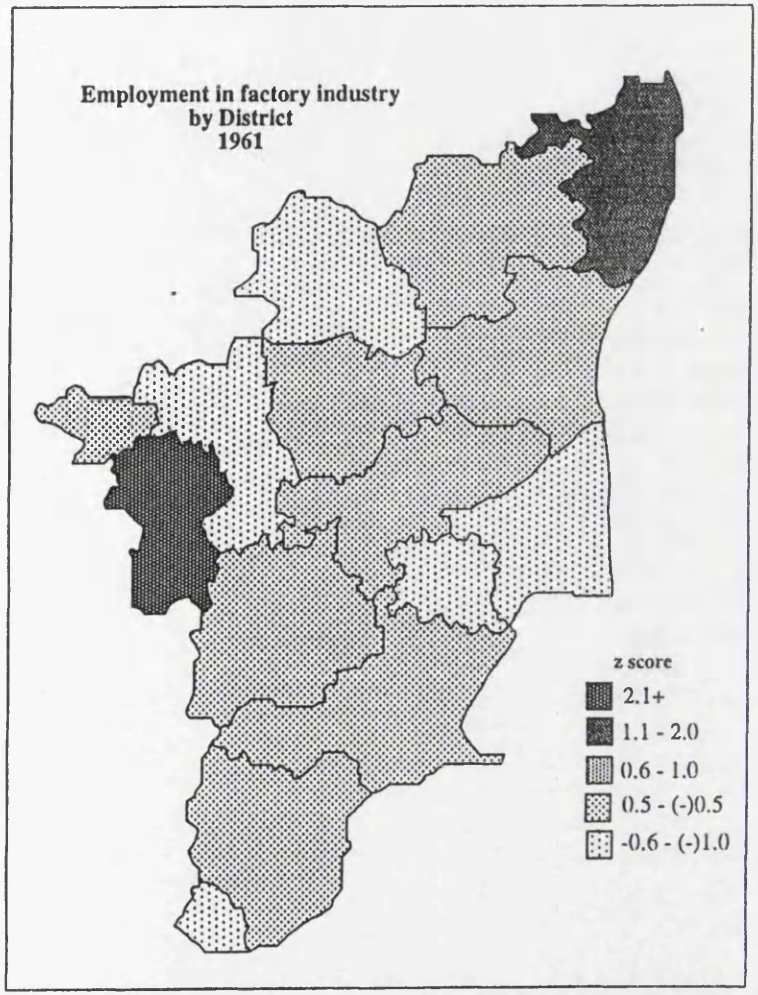
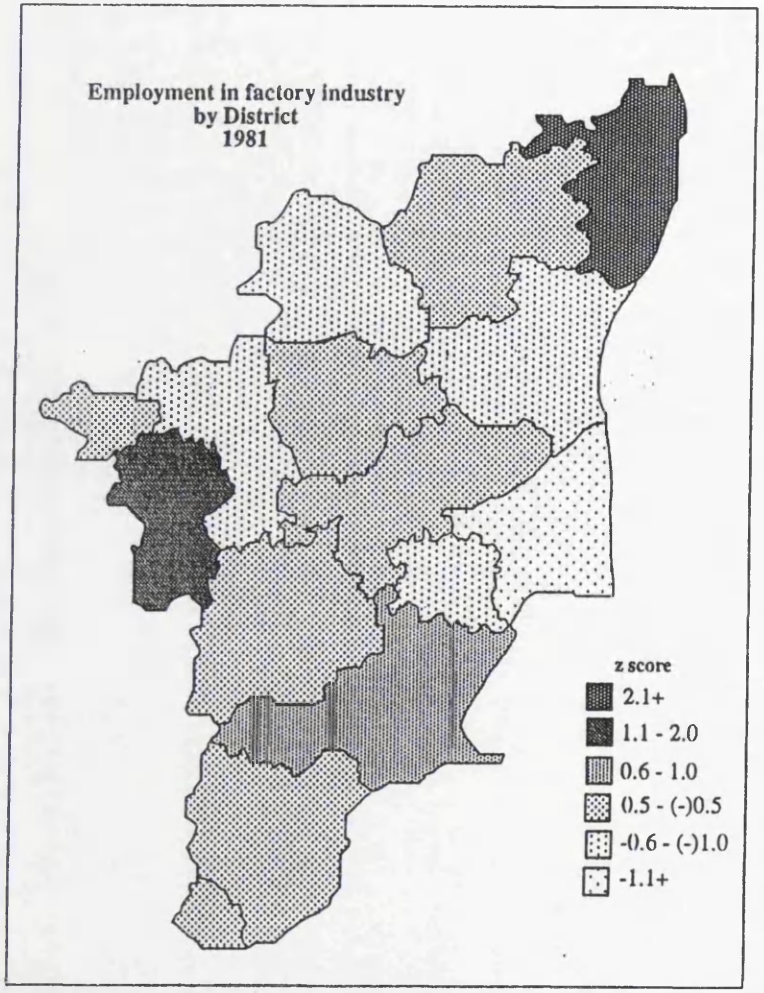
[6] 1991 Census data on employment in 'non-household industry' is available for the districts, but it has not (yet) been possible to make use of it, partly because the latest data on factory employment refers to 1987/8; and also because of further boundary changes, the details of which have not so far been published by the Census authorities.



MAP 7.3 Administrative Districts, Tamil Nadu, 1981



MAP 7.4 Z scores of percent employment in factory manufacturing by District, Tamil Nadu, 1961



MAP 7.5 Z scores of percent employment in factory manufacturing by District, Tamil Nadu, 1981

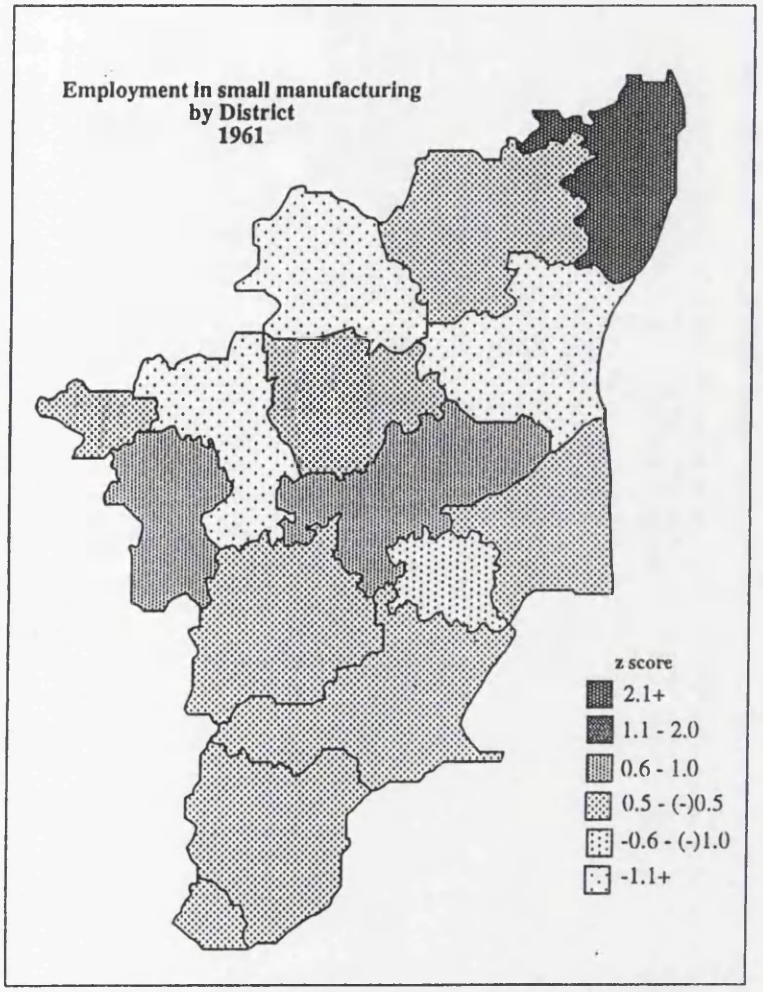
of the major growth centre at Hosur whose development did not commence until 1974. In the case of the Periyar and Pudukkottai, the assumption of a constant share of factory employment between 1961 and 1981 is perhaps more heroic. But like Dharmapuri, these two districts are also among the least industrialised districts; Periyar had 1.4% of total factory employment in 1981, rising to 1.6% by 1987/88, while Pudukkottai had 0.8% and 0.9% for the same years. It may not be too heroic therefore to assume that the 1961 share was much the same as their share of factory employment in 1981. What is evident, is that in the absence of any sub-district breakdown of the factory employment data, making some sort of assumptions is unavoidable.

Maps 7.4 and 7.5 depict the distribution of factory industry among the districts in 1961, and 1981, on the basis of employment. For each district the number of workers in factory industry is expressed as a percentage of the district labour force, and that data is expressed in terms of Z scores, showing standardised deviations around the mean. For the purposes of the analysis presented here, the data for the city of Madras has been amalgamated with that for the surrounding district of Chingleput. This is partly a reflection of geographical reality; part of the population and economic activity in Chingleput is 'overspill' across the boundary of the city into the adjoining district. In addition, inspection of the data reveals that Madras is an outlier on almost every count. Amalgamation of the two districts helps to reduce the exaggeration of this influential case.

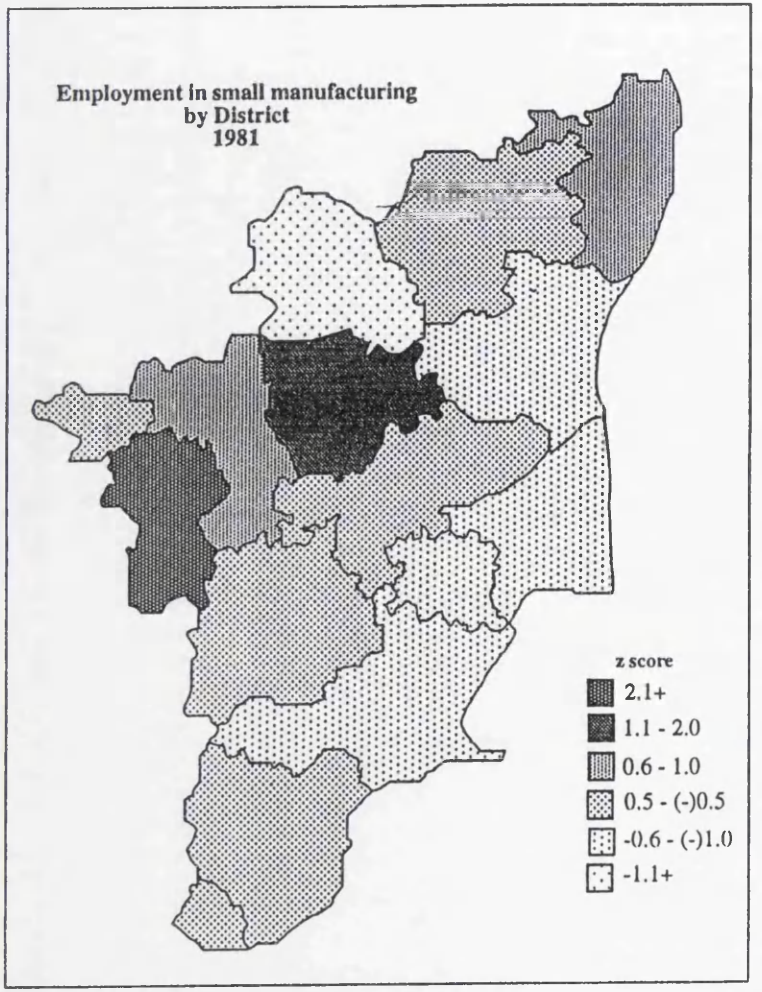
What the two maps show is that factory employment is very unevenly distributed among the districts. In 1961, the two districts of Madras/Chingleput, and Coimbatore stand out with their above average levels of employment in factory industry. Together they accounted for rather more than half of all employment in medium and large factories. By 1981, the picture is much the same, with the same two districts accounting for 47% of total employment. Ramanathapuram also

emerges in 1981 as above average. By contrast, a number of districts have consistently below average employment in factories, and these include Dharmapuri, one of the poorest districts in the state, and South Arcot and Thanjavur both of which are relatively prosperous, intensively farmed areas. The broad conclusion one might draw from these maps is that over the 20 year period, there has not been any significant change in the distribution of factory industry. New localised clusters of factories have developed within some of the districts, for example at the SIPCOT-sponsored growth centre of Hosur within Dharmapuri district, and the emerging industrial complex around the port of Tuticorin (Tirunelveli district). The only significant change detectable at the district level is the emergence of Ramanathapuram, and this seems to be largely a reflection of the growth of the match and fireworks industry in and around Sivakasi and Sattur in the western part of the district. The salient feature is the continuing concentration of the factory sector in and around the principal urban centres of Madras and Coimbatore.

It has to be acknowledged that employment is not the only, nor necessarily the best way of depicting the distribution of industry. It might be preferable to look at such indicators as capital investment, value added, or value of output, but when it comes to looking at the geography of small manufacturing, such data are simply not available, and we have little option but to use data on employment. Maps 7.6 and 7.7 show for each district the labour force employed in small manufacturing. In 1961, Madras/Chingleput was well above average, with Coimbatore and Tiruchirappalli just above the average for the state. Dharmapuri, Periyar, Pudukkottai and South Arcot, by contrast were well below average. By 1981, the pattern had been substantially changed. While Madras/Chingleput continued to be above average, a new feature is the emergence of a belt of three contiguous districts - Coimbatore, Periyar and Salem - with above average employment in small industry. It is these three districts, together with Madras/Chingleput,



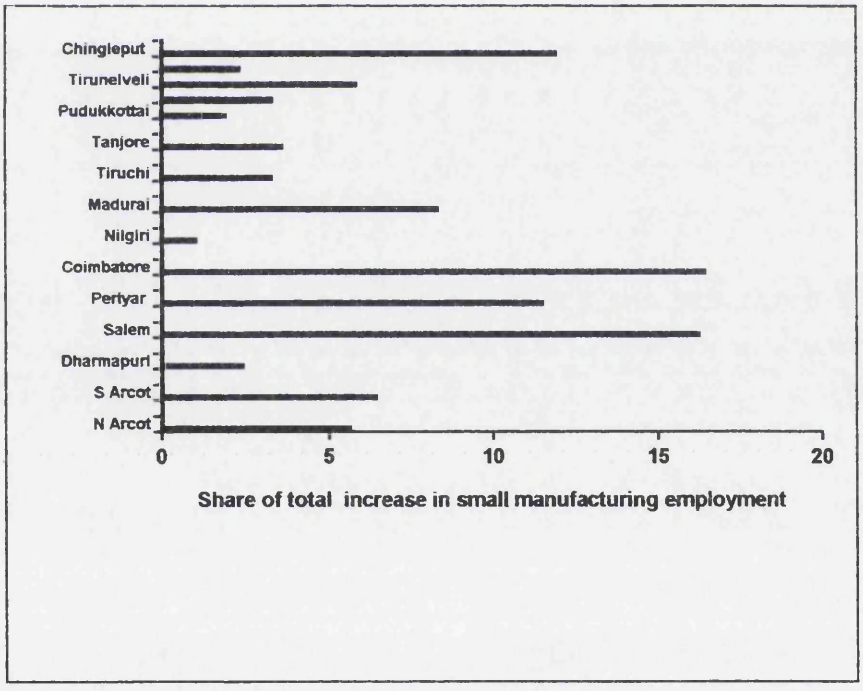
MAP 7.6 Zscores of percent employment in small manufacturing by District, Tamil Nadu, 1961



MAP 7.7 Z scores of percent employment in small manufacturing by District, Tamil Nadu, 1981

which have had the largest shares of the total increase in small industry employment over the period 1961 - 1981 (Figure 7. 3). In their analysis of the growth of small scale industry over the period 1961/1971, Kurien and James also pointed to the relatively high rate of growth of employment in Coimbatore and Salem districts, but noting the difficulties of accessing reliable information about the small scale sector, they offered no explanation for this (Kurien and James, 1979: 122-125). There is however, a striking correspondence between the high growth belt, and the

FIGURE 7.3
Share of increase in employment in small industry by District,1961/81



line of rapidly growing class one cities identified by Misra and Chapman suggesting that the growth of small manufacturing employment may be related to the process of urbanisation (Misra and Chapman 1991:277).

A simple correlation of employment in small industry with the level of urbanisation by district tends to support this (Table 7.6). The results suggest that small manufacturing employment was more urbanised in 1961, and became somewhat less so by 1981, whereas the opposite was the case for factory industry, where the trend was towards a closer association with urbanisation. In the case of small scale industry, simple regression of employment in small industry on urbanisation yields an R^2 of 0.575 for 1961, and 0.421 for 1981[7]. While the 'explanatory' power of urbanisation has apparently waned, the level of urbanisation remains statistically significantly associated with small manufacturing employment. The residuals from

TABLE 7.6
Correlation of employment in industry and urbanisation, 1961 and 1981

	Correlation 1961			Correlation 1981		
	Facind	Urb	SME	Facind	Urb	SME
SME	.4945	.7576**	1.0	.6053*	.6486*	1.0
FACIND	1.0	.6376*	.4945	1.0	.7616**	.6053*

* = significant at .01 ** significant at .001

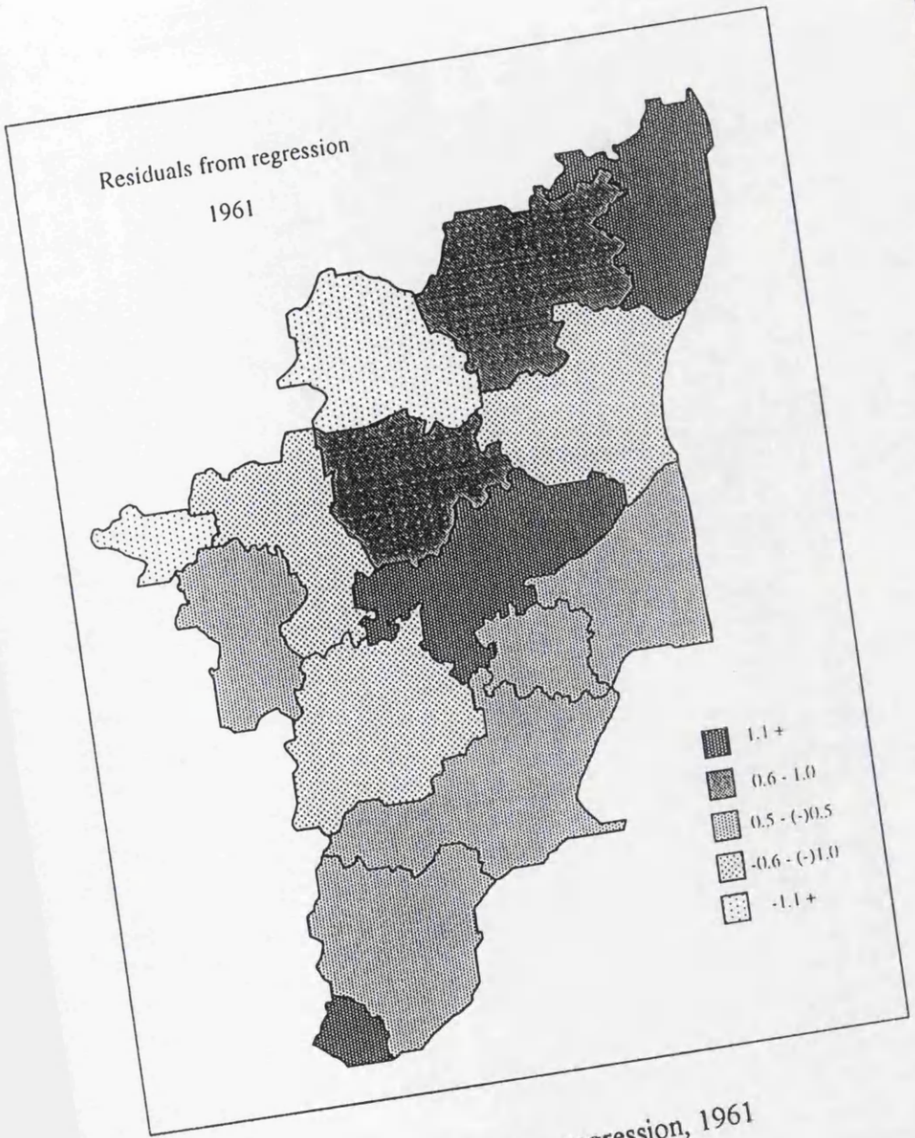
SME = small manufacturing employment
Facind = employment in factory industry
Urb = percentage of population living in urban areas

Moran's I for spatial autocorrelation:

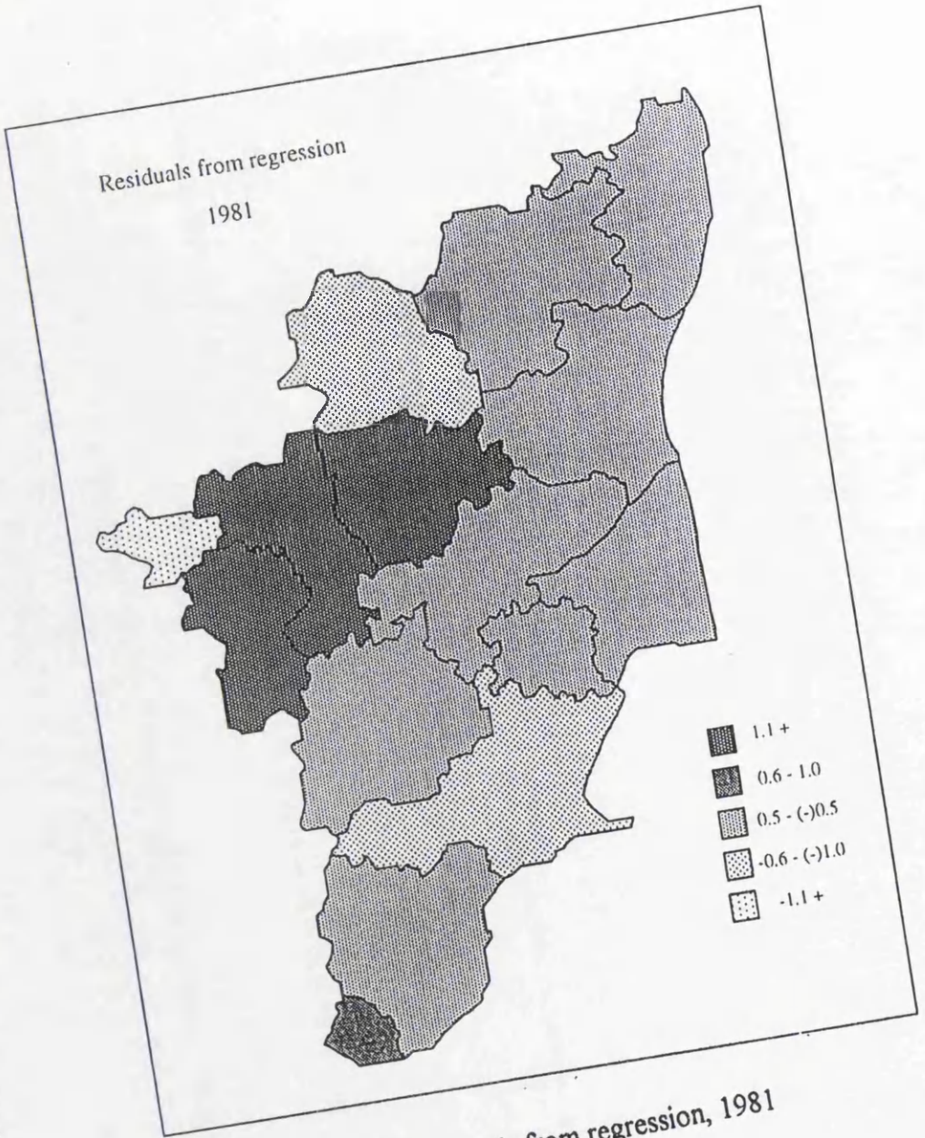
SME = 0.11	SME = 0.17
Facind = 0.01	Facind = 0.30
Urb = 0.05	Urb = 0.06

regression for 1961 (Map 7.8) reveal that four districts had higher levels of small manufacturing employment than would be expected given their degree of urbanisation - namely, Madras/Chingleput, North Arcot, Tiruchirapalli and Kanyakumari. These areas do not appear to have any common characteristic, but

[7] For 1961 the regression equation is y = 1.586 + 0.13 with T= 4.186 and sig T= .001
For 1981 y= 3.84 + 0.13 with T = 3.07 Sig T = 0.0089



MAP 7.8 Residuals from regression, 1961



MAP 7.9 Residuals from regression, 1981

there are ad hoc explanations, or rationalisations that can be invoked. Presumably, the high level for Madras/Chingleput reflects the role of the city as an important industrial and commercial centre, and the concentration there of relatively affluent groups, creating greater openings for small manufacturers while North Arcot is well known as a district which has long specialised in tanning and the leather trades. The districts with lower than expected levels of small manufacturing employment, Dharmapuri and Nilgiri are easier to account for; Dharmapuri as pointed out earlier is the most 'backward' of the districts in the state, and presumably the lack of local purchasing power as well as a poorer infrastructure has inhibited the growth of modern small industry, while Nilgiri is relatively inaccessible.

For 1981, the residuals from regression present a different and rather simpler picture (Map 7.9). Relatively high negative residuals, indicating less than expected levels of small manufacturing are associated with Nilgiri and Dharmapuri and presumably for the same reasons as noted earlier. High positive residuals are associated with the three contiguous districts of Coimbatore, Periyar and Salem, the belt identified above as having a large share of the increase in small manufacturing

That these three districts do contain a significant concentration of small industry is corroborated by data from the Second Census of Small Manufacturing. While this data refers to a self-selected sample of registered small industries and is not strictly comparable with the data used above, it does support the analysis presented in the foregoing. Table 7.7 provides data on the number of registered units per 1000 of the population for each of the districts of Tamil Nadu, and it shows that five districts have above average numbers of registered small units - Madras/Chingleput, Coimbatore, Salem, Periyar and Ramnad. With the exception of the latter, the other four districts are identified in the analysis above, and this, in

spite of - or perhaps because of - the differences in the make-up of the data helps reinforce the view that there is a striking concentration of small industry in a belt of territory covering the districts of Coimbatore, Periyar and Salem.

The Census of Small Industry provides useful information on the industrial structure of registered units in these three districts. It will be seen from Table 7.8

TABLE 7.7
Registered small scale industrial units per 1000 population, by District

District	Registered Units/1000 population
North Arcot	0.9
South Arcot	0.7
Chingleput/Madras	2.0
Coimbatore	2.4
Dharmapuri	0.8
Kaniyakumari	1.0
Madurai	0.9
Nilgiri	0.8
Ramnad	1.3
Salem	1.3
Thanjavur	0.6
Tiruchirappalli	0.9
Tirunelveli	1.0
Pudukkottai	1.0
Periyar	1.2
State average	1.1

Source: Registered small units: Government of Tamil Nadu, Directorate of Industries and Commerce, 1992. Population; Census of Population, 1981

that the structure varies between the three districts. In Periyar and Salem, the leading small industry, in employment terms, is food processing, whereas in Coimbatore District, the lead industry is hosiery and garments. The hosiery industry is localised in and around the town of Tiruppur, which has become an important export centre (Cawthorne 1990). What is also remarkable is the much greater importance of the engineering industries (NIC groups 33 - 37) in Coimbatore District, accounting for some 42% of all employment in registered small industries in that district, compared with only 17% in Periyar and 18% in Salem. The only other districts in the state with a significant localisation of small

engineering units are Madras and Chingleput, where 33% and 40% respectively of employment is in groups 33-37. These differences between districts in the structure of the small manufacturing sector seem to be related in turn to differences in the rural/urban location of registered small industry. The Census records that overall 71% of registered units in Tamil Nadu are located in urban areas. In Coimbatore, 90% of units are recorded as 'urban', while in Salem and Periyar, the proportion drops to 55% and 57% respectively. We may surmise that the higher proportion of rurally located units in these two districts reflects the preponderance of units engaged in food processing an activity which has close connections with the rural economy. It might be noted that Papola, on the basis of

TABLE 7.8
Sectoral distribution of employment in small industry
Coimbatore, Salem and Periyar Districts

NIC	Industry	% of employment by district		
		Coimbatore	Periyar	Salem
20/21	Food products	3.5	31.1	32.3
22	Beverages and tobacco	0.3	0.6	1.2
23/5	Cotton etc textiles	2.2	4.8	4.6
26	Hosiery and garments	31.9	4.3	6.6
27	Wood, wood products	1.3	2.6	3.2
28	Paper, paper products	5.4	8.0	8.1
29	Leather	0.4	9.5	0.6
30	Rubber and plastics	3.0	4.0	3.4
31	Chemicals	3.2	3.8	2.6
32	Non-metallic minerals	2.6	6.2	7.8
33	Basic metals and alloys	8.8	2.4	1.6
34	Metal products	7.0	7.1	6.6
35	Non-electrical machinery	17.6	5.7	6.8
36	Electrical machinery	6.4	1.0	0.9
37	Transport equipment	2.3	0.4	2.5
38	Misc. manufacture	0.4	0.7	0.7
97/99	Repair services	3.6	7.8	11.5

Source: Government of Tamil Nadu, Directorate of Industries and Commerce, 1992

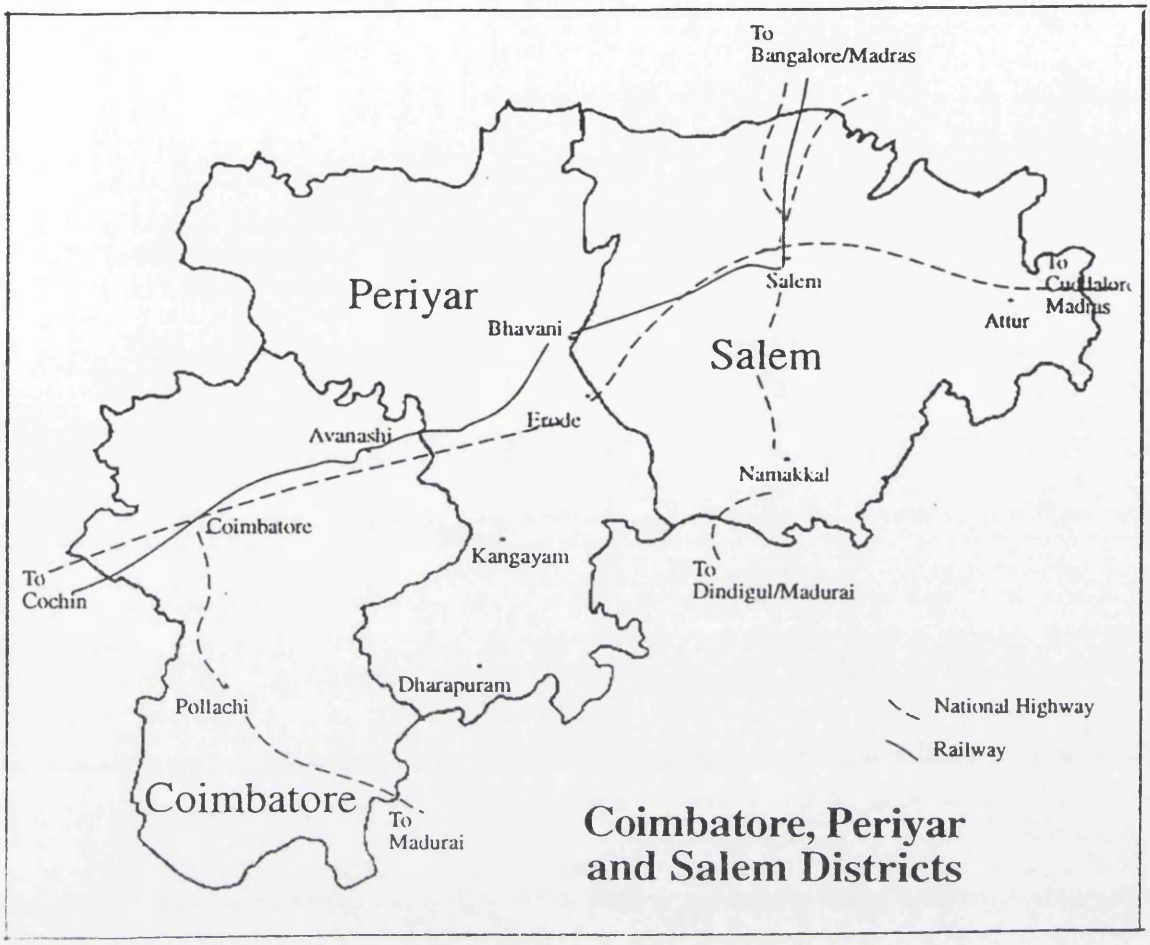
his study of rural industrialisation suggests that differential rates of industrial growth in rural areas are due, not so much to differences in raw material supplies, but rather to differences in the growth of agricultural productivity, such that areas of more rapid growth of output are likely to be those with higher incomes, purchasing power and a larger potential investible surplus (Papola 1987: 103). Demand factors, rather than supply, seem to be crucial. In the present instance, however, the point is simply to contrast the profile of small industry in Periyar and Salem, with that in Coimbatore. In the latter case, the structure of the small scale sector is dominated by the garment and the engineering industries, which together account for some three quarters of employment. Within these sectors, there is likely to be a much greater division of labour and specialisation by product and process, and this may encourage greater geographical concentration in urban areas as compared with units producing and processing food products.

What does seem clear is that small industry is not a homogeneous category; rather it comprises a diversity of activities, with different organisational and locational characteristics. This further suggests that we need to move on from looking at small industry in general, to a more specific focus on particular branches of small industry.

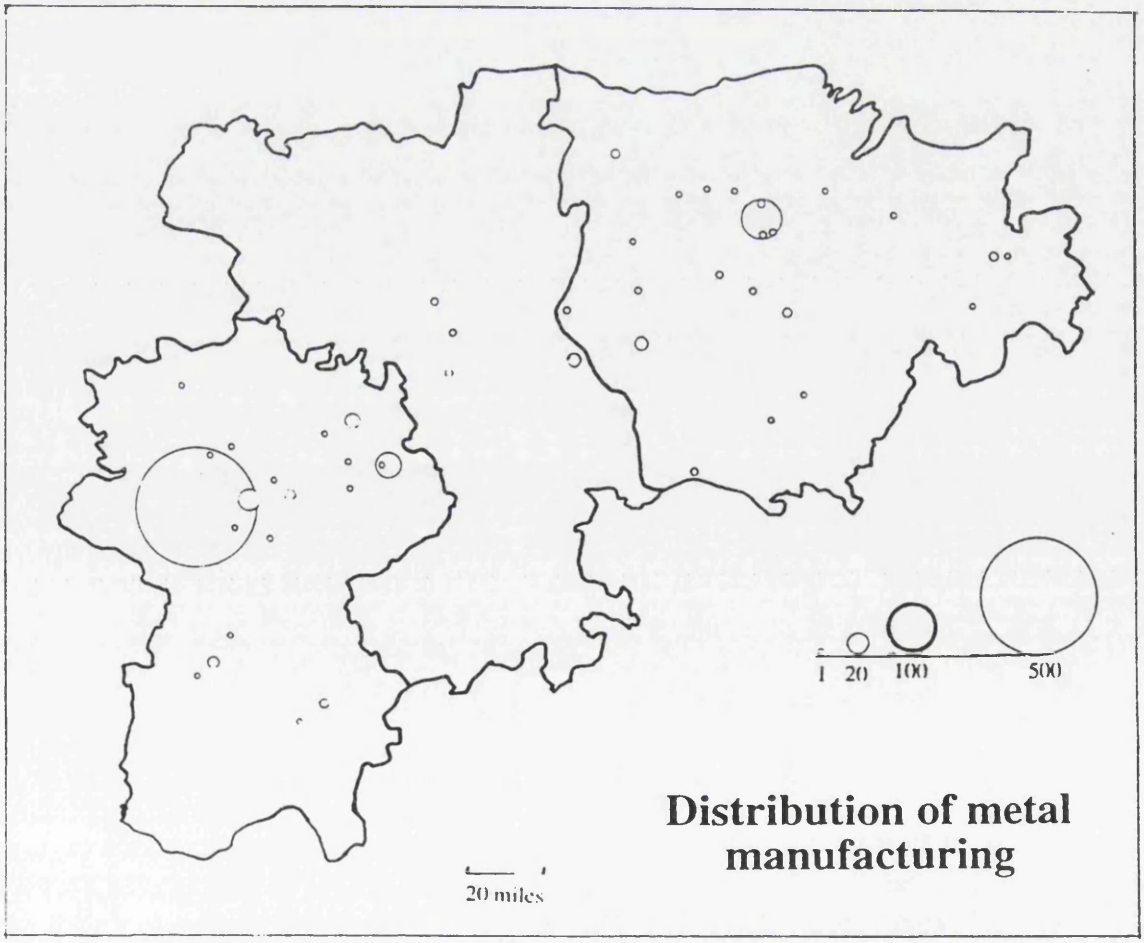
We have looked in this chapter at aspects of the geography of small manufacturing. Small manufacturing industry is unevenly developed both among the states of India, and as we have seen in the case of Tamil Nadu, among the districts of the state. It has been argued that the level of urbanisation and industrialisation helps to explain this uneven development, with the more industrialised and urbanised areas offering greater scope and greater opportunities for the growth of small industries. The notion that small industry promotion would help alleviate regional imbalances lacks both theoretical and empirical support. The states which were already more developed in 1961 continued to be the more

developed in 1991, and these more developed states contained a large and indeed growing share of small manufacturing. In 1961 the five more developed and urbanised states accounted for 50.1% of employment in small manufacturing industry, and for 59.1% in 1991. On the face of it, the more developed areas of the Union have witnessed a process of cumulative concentration which can hardly have helped to alleviate imbalances between the states.

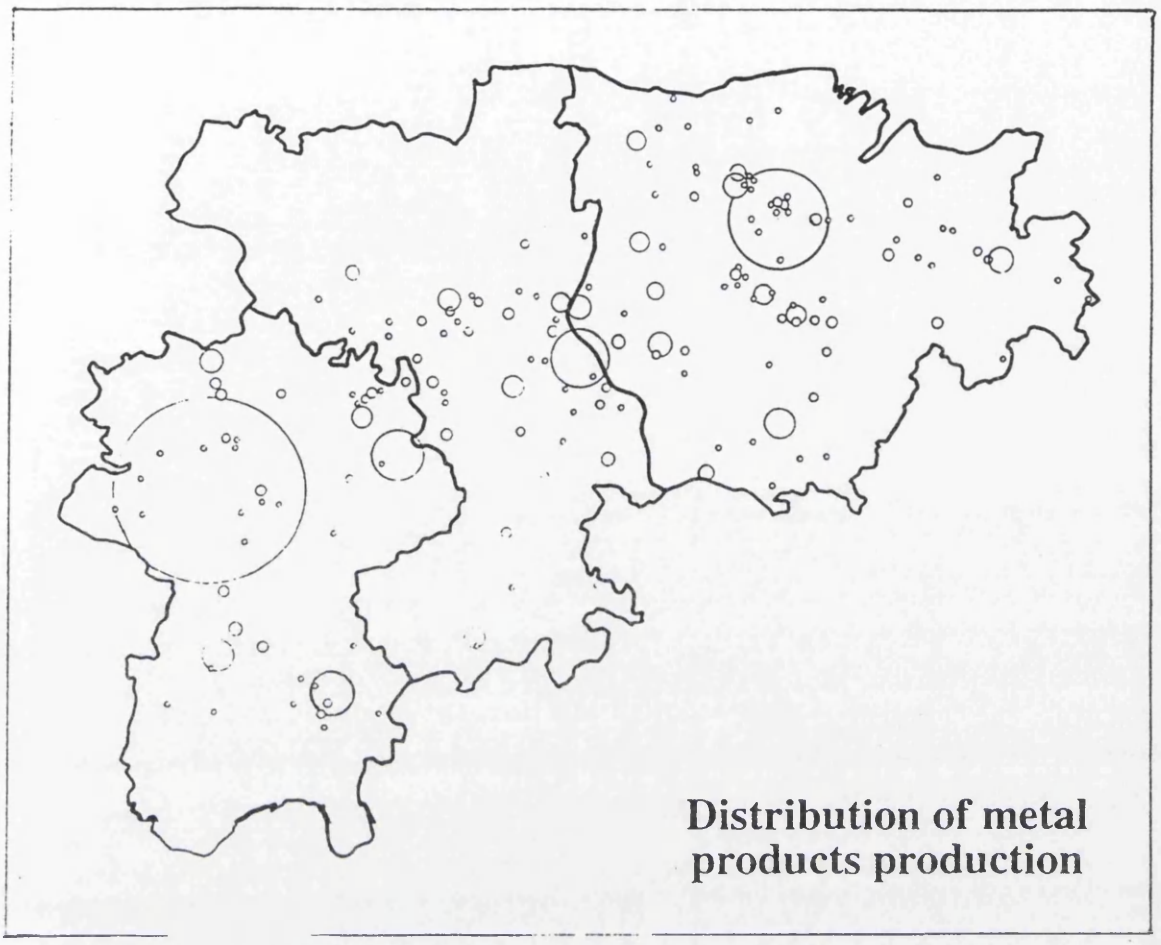
However it is plausible that within the states, the growth of small industry may have contributed to reducing the disparities between city and countryside. The evidence from Tamil Nadu does not entirely invalidate the view that small industry can help reduce rural-urban imbalances. Overall, the distribution of small manufacturing among the districts is related to the level of urbanisation and industrial development generally, but the relationship is not a strong one. In trying to account for the pattern of small industry growth, it was found useful to disaggregate the small manufacturing sector into its components. The evidence suggests that certain sectors of small manufacturing, notably food processing seem to be more dispersed and less concentrated in urban areas. On the other hand, the engineering sector is more heavily concentrated into the urbanised areas, as shown in Maps 7.10 to 7.15, based on data from the State Directory of Small Manufacturing Industries. Generalising from this, we might conclude that some sectors of small industry are more ubiquitous, making use of locally available inputs and perhaps serving local demands, while other sectors of small industry show a more marked tendency to clustering.



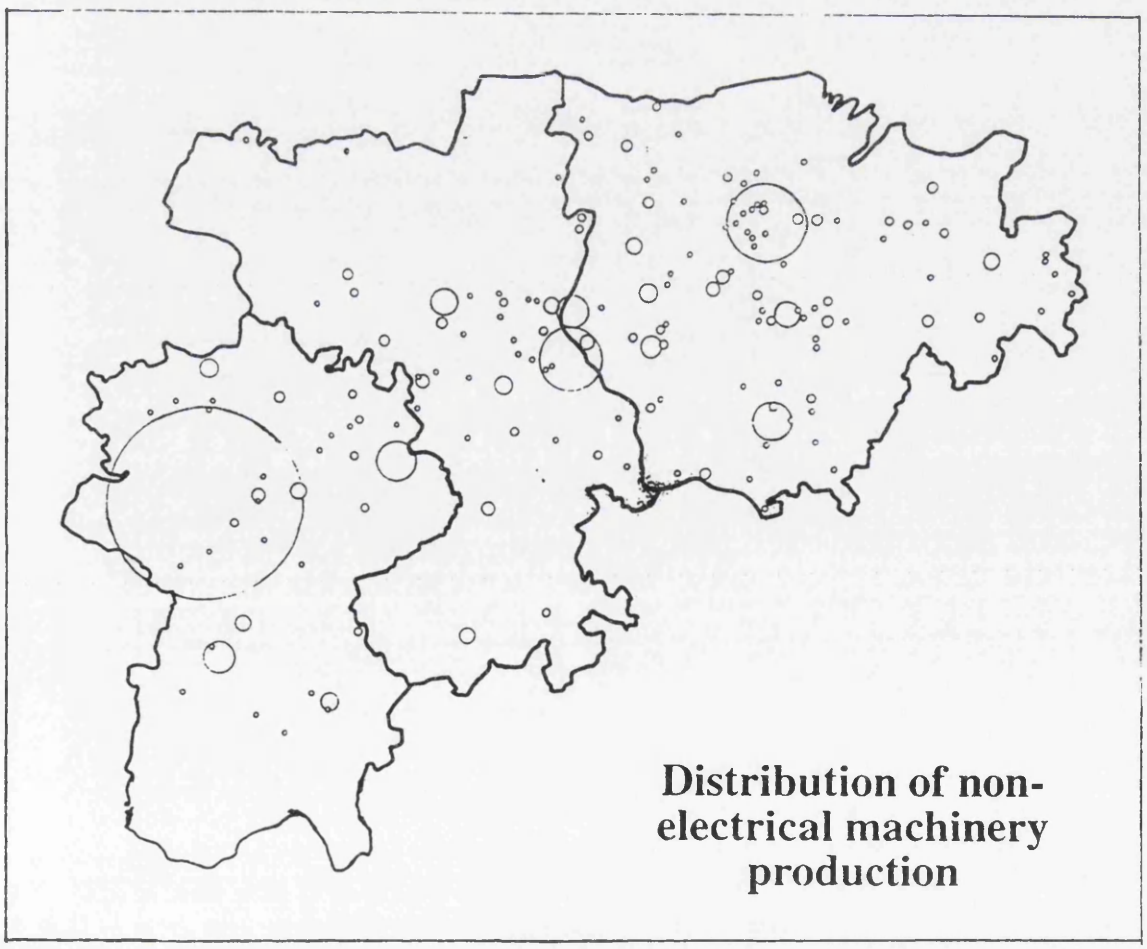
Map 7.10 Coimbatore, Periyar and Salem Districts



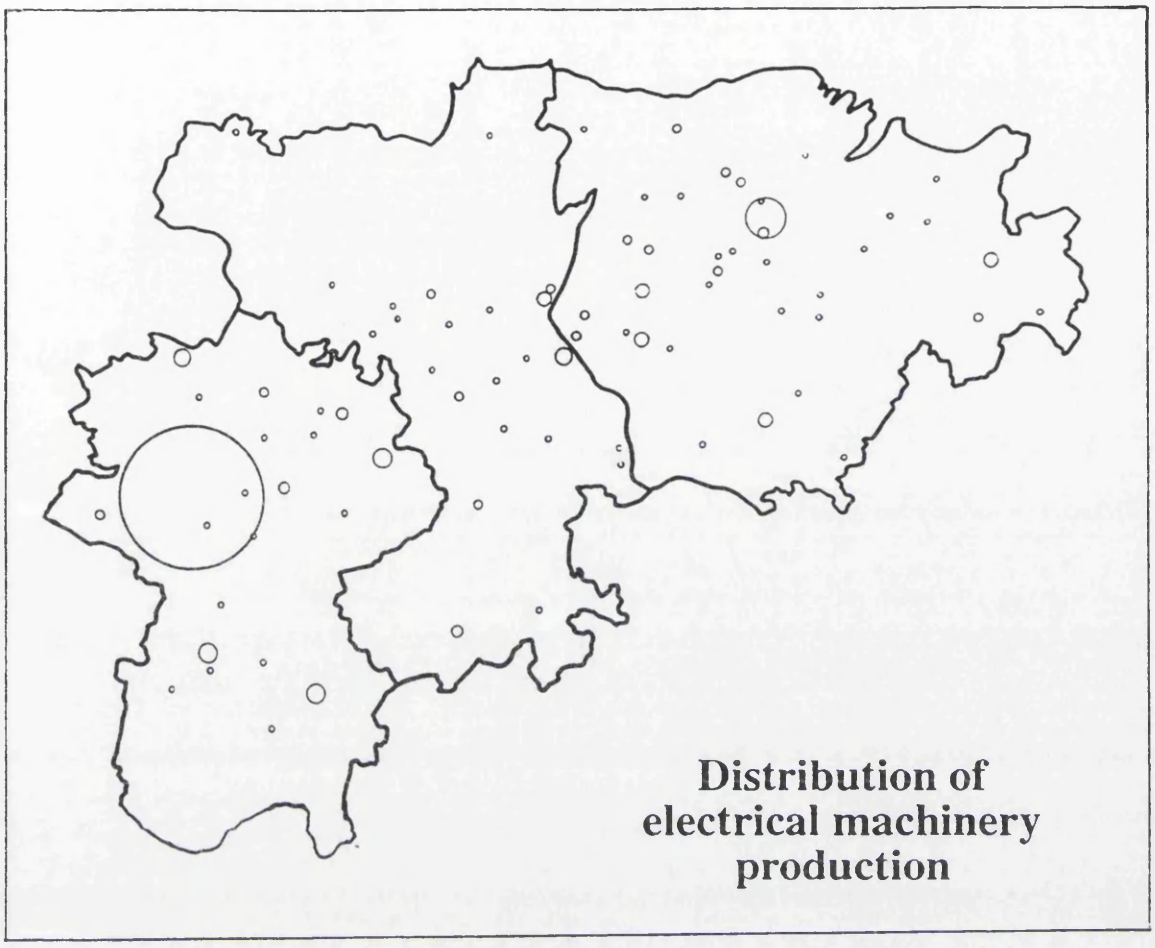
Map 7.11 Distribution of metal manufacturing



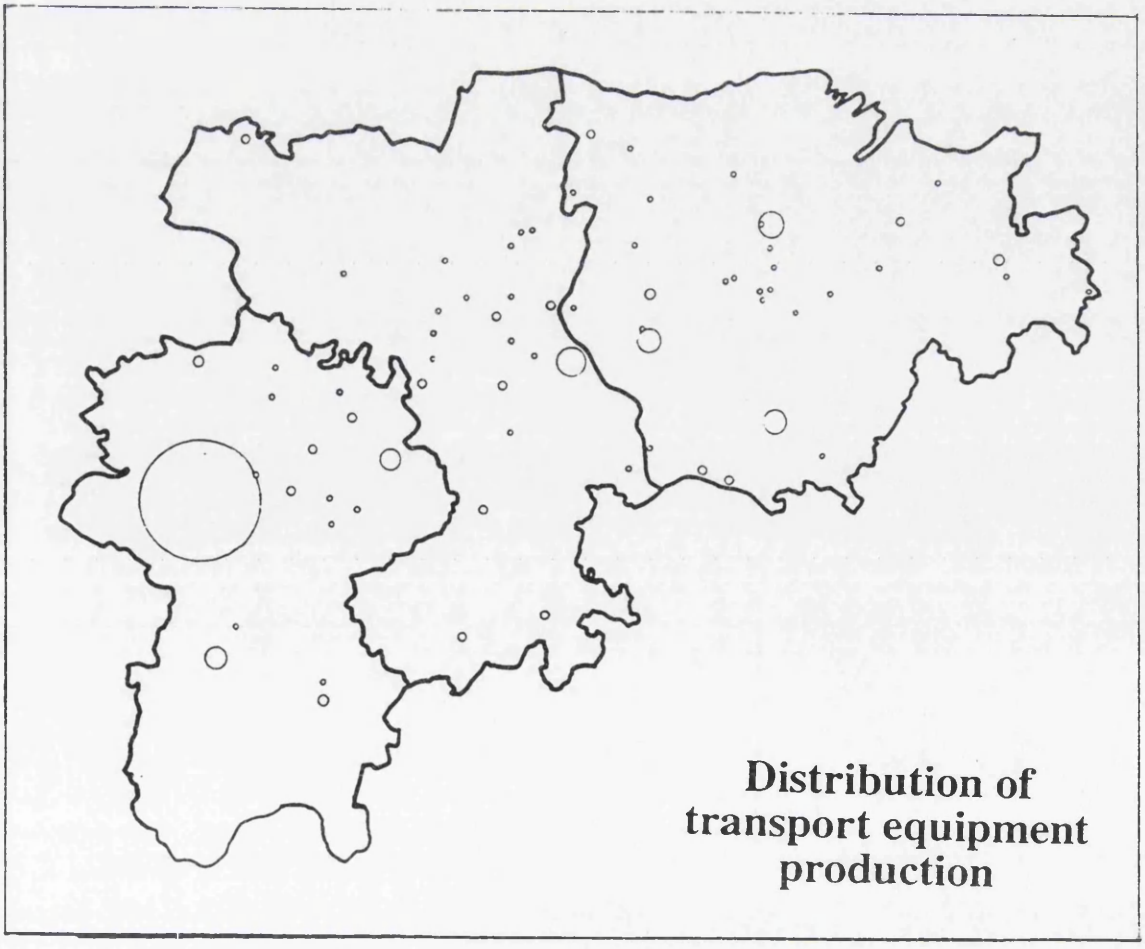
Map 7.12 Distribution of metal products production



Map 7.13 Distribution of non-electrical machinery production



Map 7.14 Distribution of electrical machinery production



Map 7.15 Distribution of transport equipment production

CHAPTER 8 SMALL ENGINEERING IN COIMBATORE

The previous chapter showed a local concentration of light engineering units in the city of Coimbatore. In this chapter, we explore the nature of this cluster of small manufacturing units in the light of the three models introduced in chapter 1. The competitive cluster is defined as one in which a multiplicity of small units is able to survive, but because of intense inter-unit competition, the prospects for growth and accumulation are severely attenuated. The non-hierarchically organised cluster approximates to the classical industrial district, in which small units exhibit a high degree of specialisation, generating external economies which benefit the cluster as a whole, allowing individual firms to grow, accumulate and adapt over time. The third model is that of the hierarchically organised cluster, where small units are tied to large firms as subcontractors, but in a way that is beneficial to the former through stable relationships and technology transfers. These three models all have a superficial plausibility in the Indian context. As an industrial city containing both a number of large scale enterprises, and a large small scale sector, Coimbatore, with a 1991 population of 1.1 million, offers an opportunity to explore these different models.

Industrial Coimbatore

Large scale, factory manufacturing in Coimbatore is dominated by the textile and engineering industries, all of them in the private sector. The first modern, steam-driven textile mill was established in 1890, but it was in the interwar years that the city's manufacturing base came to be firmly established. The completion of the Pykara HEP scheme in 1934 provided a source of cheap local electricity at a time when the world depression was forcing grain prices down. Local Naidu landowners began to switch their attention away from agriculture and trade to industry, and especially to textiles, which would be able to make use of locally grown cotton (Baker 1976: 184). Cheap labour in the district helped to ensure

that the mills were profitable, and aided by the friction of distance, the Coimbatore industry was more than a match for its counterpart in Bombay and Ahmedabad (Ramaswamy 1977: ch 2). By 1937, Coimbatore had 30 mills, a number which continued to grow after Independence, so that by the late 1980s there were some 86 (mostly spinning) mills in the city. The textile industry in turn helped to stimulate the growth of the engineering industry to produce, maintain and repair machinery. Textile engineering remains significant today. Two of the biggest engineering companies in Coimbatore are Lakshmi Machine Works and Textool Co., the two largest (in terms of sales) suppliers of textile machinery in India. Lakshmi with more than 3000 employees, claims to be one of the three largest producers in the world, manufacturing sophisticated computer-controlled equipment with Swiss collaboration .

A second impetus to the growth of the engineering industry lay, as John Harriss has pointed out, in the agricultural origins of the city's early industrialists (Harriss 1982 :948). In 1924, Govindaswamy Naidu set up a foundry and workshop to produce centrifugal pumps to enable him and his fellow landowners to tap underground water for irrigation. A second pumpset manufacturer opened in 1926, and the industry grew steadily until the late 1950s, since when it has grown at a more rapid pace (Cartillier, 1975) It is estimated that there are today some 400 firms making pumps, pumpsets, and compressors, some 50/60% of total Indian production. In addition to their agricultural uses, pumpsets have a variety of other applications, including air-conditioning systems, refrigeration units and domestic water supply.

A further element in the engineering industry is the production of automotive components. The main centre of automotive engineering in Tamil Nadu is Madras, but Coimbatore has spawned several important component producers, among them Premier Instruments and Controls, makers of oil pumps and car

instruments; L.G.Balakrishnan which specialises in producing timing chains for cars and trucks, while its sister company, Elgi Engineering, makes garage forecourt equipment, but its principal business lies in the manufacture of compressors, in which role it is the number one producer in India in sales terms.

Textile machinery, pumpsets and automotive components are the main identifiable branches of engineering in Coimbatore, but it has to be emphasised that the range of products and components is considerable. The concentration of engineering in the city has created its own supply industries, with firms making a wide range of equipment from rivets and screws to lathes, drilling machines and machine tools. Part of the service sector is also geared to serving industry; there are, for example, many traders who supply scrap metal for foundries, distributors of ferrous and non-ferrous metals, of components and machinery, as well as accountants, advertising agencies, and transport operators.

The engineering industries are a significant component of Coimbatore's industrial economy, but in the absence of any comprehensive information, it is well nigh impossible to provide any estimate of the relative importance of engineering in the structure of the industrial sector as a whole. What can be said is that industry generally, and engineering also, is characterised by a structure in which there are a small number of large firms, and a large number of small firms. There are some 1300 registered factories in the Coimbatore urban agglomeration, but of those less than a hundred could be described as large (i.e. employing more than 500 workers), and the majority of these are textile mills. Nine large factories can be identified as involved in 'engineering'. The majority of units in the factory sector are small with up to 100 workers. Their number is dwarfed by the size of the small-scale sector. The Assistant Director of the District Industries Centre estimates there are some 40,000 small scale manufacturing units, some of which

are registered, many of which are not. The number may well be exaggerated, but it gives some idea of the multitude of small units which litter the city.

Small Engineering Units in Ganapathi

Ganapathi is a district within municipal Coimbatore. It contains a mix of residential, retail, trading and industrial land uses. Within the area - whose boundaries are indeterminate - there are a number of textile mills, of large engineering factories, including the main Textool plant, as well as a multitude of small factories and tiny workshops. It was in this area that a questionnaire survey was undertaken (Chapter 1), the sample comprising

- 56 registered small scale units
- 10 units that were registered as small scale and factory units
- 25 unregistered units.

making a total sample of 91 units. These units vary considerably in terms of the types of activity engaged in, size, and mode of operation. They range from tiny workshops using simple basic equipment, to small factories in purpose-built premises, with a much greater range of plant and machinery.

The majority of units in the sample (86%) were owned by a single proprietor, with the balance of 14% being partnerships, usually of two people, but in two cases there were three partners and in two others, four. The larger partnerships were invariably family groupings, in which only one 'partner' took an active role in the day-to-day operation of the enterprise. In dual partnerships, on the other hand, both partners were usually involved in the day-to-day operation of the unit. The category of 'partnerships' created some difficulty in recording some information. It was not always possible to secure details of both/all partners, but an attempt was made to include data about 'active' partners, and to exclude 'sleeping partners'. What this revealed was that the majority of small manufacturers in the sample tended to be of local origin. Of the 120 owners/partners for whom information

was available, 65% had been born within the present Coimbatore Urban Agglomeration, but only 5% from the rest of the Coimbatore District. 21% had been born in some other District within the state of Tamil Nadu - mostly the larger cities such as Salem, Erode and Trichy. 8% originated from the neighbouring state of Kerala. The remaining 1% comprised two individuals, one from Bangalore and one from Harsad in Northern India. The backgrounds of this group were overwhelmingly urban - only one individual had a background that was in any sense rural, having previously been a blacksmith in a village in Madurai District.

Multiple ownership of units is uncommon among the sample. It has been suggested that the existence of an upper investment ceiling beyond which registered small units lose access to concessions encourages the fragmentation of units under the same ownership (Cawthorne 1993). In this sample only 15 out of 91 units (17%) had a 'sister' unit. The majority of units had been founded by their present owners, and constituted their sole enterprise.

Prior to setting up their present business, the majority of owners had been in some form of employment. The activity of the 120 individuals prior to the establishment of their unit is recorded in Table 8.1. Two-thirds of the group were previously employed, mostly in large scale manufacturing industry, with a minority having previously worked in small scale units. This background of employment in industrial work may be significant in several ways. Savings from wages and bonuses seem to be an important means by which capital can be accumulated to set up a small unit. Secondly, previous industrial employment is also a means by which skills and experience can be acquired, and no less important, it is a means by which contacts can be built up and subsequently exploited. A case in point is the TT Co. whose owner had worked for some years in a unit making synthetic gems. Not only had he acquired a considerable knowledge of the trade generally,

he had contacts with other units in and around Coimbatore, which he was now able to capitalise on in his capacity as a manufacturer of high frequency induction hardening machinery.

Among those previously self-employed, almost all had previously been engaged in trade and distribution, particularly of manufactured goods and components. DT Ltd is an example. The owner was originally a distributor of electrical

TABLE 8.1
Previous employment status

Status before setting up present unit:		
	Number	%
Employed	78	65.0
Self-employed	16	13.3
Unemployed	17	14.2
Education	9	7.5
TOTAL	120	100

components. Using readily available components he began manufacture as a side-line, eventually selling out his distributorship to concentrate on manufacture. Those who had previously been unemployed are an interesting group of predominantly educated unemployed individuals. Of this group of 17 individuals, 3 possessed no educational qualifications, while 8 had a degree/diploma and 6 had completed secondary school. For this group, setting up a small unit may have been a way of avoiding continuing unemployment in an economy where the educated unemployed are a recognised problem.

The educational background of the sample as a whole is remarkably high (Table 8.2). Of 120 owners/partners, almost half have a degree or diploma. Of the 58 individuals in this group, 53 have a qualification in engineering or science. The sample also includes 30% of partners/owners who have completed secondary

school. By comparison, the 1981 Census of Tamil Nadu reveals that only 8.35% of the population have completed secondary school, and 1.27% have a degree or equivalent. This highlights the exceptionally high educational background of the

TABLE 8.2
Entrepreneurs' educational background

Education	Number	%
Secondary school leaving certificate	36	30.0
Industrial Training Institute certificate	8	6.7
Degree/diploma	58	48.3
None of above	18	15.0

sample. The number of proprietors with ITI certificates is surprisingly low. Industrial Training Institutes were set up to train craftsmen in a variety of trades, including engineering, but in this sample, relatively few of the vocationally-trained find their way into the small scale sector, at least at the level of proprietors.

A further striking feature of the sample concerns caste origins. The sample is heavily skewed. The relevant data, referring to 70 individual proprietors is given in Table 8.3 which shows that two-thirds are drawn from the Gounder and Naidu castes. As noted already, the Naidus (also referred to as Naicker) were the main landowning castes, who began to diversify their interests into industry in the interwar years, and are today the dominant caste, politically and economically, in Coimbatore. The Gounders (or Vellalas) were traditionally cultivators as were the Mudaliars, and with the Chettiars, traditionally traders and moneylenders, are the numerically dominant castes according to local sources. It is clear from the data

TABLE 8.3
Caste background of sample

Caste	Number	%
Gounder	24	34.3
Naidu	22	31.4
Pillai	5	7.1
Chettiar	4	5.7
Asari	4	5.7
Mudaliar	4	5.7
SC/ST	2	2.9
Other	6	8.6
TOTAL	70	

that ownership of small units in the sample is heavily biased. The lower castes, and especially the Asari, traditionally blacksmiths, are underrepresented.

According to the historian D.A.Washbrook,

> "It would generally be agreed by all who study Tamil Nadu that its society.... is particularly caste-ridden and that the question of caste affects most areas of social relations" (Washbrook 1989:205).

In the present context, the significance of caste seems to be related to several factors. First, caste membership may be important in determining access to funds. Individuals from the higher and wealthier castes can make use of their network of family and friends to raise the capital needed to set up and subsequently expand a manufacturing operation. Secondly, caste may be important inasmuch as members of a caste community may find it easier to develop business relationships with customers and suppliers who are members of the same community. Community membership may entail greater trust than is extended to non-members, and in that way membership of a particular caste may confer privileges that are not available to 'outsiders'. In these ways, caste may have a pervasive influence, affecting both entry into, and subsequent success in the small scale sector.

What this brief overview of proprietors and owners of small engineering units in Coimbatore suggests is that they are drawn from a relatively small social circle. They tend to be local in origin, relatively highly educated and members of the dominant local castes.

The Production Units

One fifth of the units had been in existence for more than 13 years at the time of the survey, and almost half for more than eight years (Table 8.4). Only 13 units (14%) were less than three years old. The mean age of the entire sample is 8.9 years, with

TABLE 8.4
Distribution of units by year of foundation

Year of start	No. of units	Percent	Cumulative %
1960/70	7	7.7	7.7
71/75	4	4.4	12.1
76/80	8	8.8	20.9
81/85	26	28.6	49.5
86/90	33	36.3	85.7
91/93	13	14.3	100
TOTAL	91		

a standard deviation of 6.7. The data in Table 7.4 throw some light on our earlier discussion in Chapter 6 on the relationship between the growth of small manufacturing and the wider macro-economy. It was suggested there that the growth of the small engineering sector was likely to have been constrained in the period of industrial stagnation from the mid-1960s until the late 1970s by raw material shortages and transport problems, whereas the more dynamic 1980s provided a more supportive environment for the small manufacturing sector. The data above, albeit of a limited nature, does suggest that as far as surviving units

are concerned, the level of unit foundation was considerably higher in the 1980s as postulated.

There is a significant difference in the age of registered and unregistered units as is shown in Table 8.5 below, with the

TABLE 8.5
Registered and unregistered small scale units by age

	Mean Age	S.D.	N
Registered small scale units	10.07	6.61	56
Factory and SSI registered	12.40	8.82	10
Unregistered units	4.76	3.88	25

F ratio = 7.96 $DF_{2,88}$ Sig at 0.005.

latter being considerably younger than the two registered groups of units. There is a plausible argument that the smaller mean for the unregistered group simply reflects a delay between the time that the unit was established and its subsequent registration. The mean differences may thus be 'technical' rather than substantive. While data was not collected systematically, it is worth noting that the majority of registered units reported that they had registered at the time of their establishment in order to take advantage of the available concessions for small units. None of the unregistered units expressed any desire to register, preferring their anonymity to the lengthy bureaucratic process of registration and what some of them perceived to be the highly questionable benefits that registration is supposed to confer.

Just as the units vary in age, so too do they vary in terms of size. 'Size' can of course be measured in a number of different ways. Table 8.6 provides data on size of unit in terms of the number of employees. The number of employees

TABLE 8.6
Distribution of units by number of employees

	----- Coimbatore-----		-------NCAER-------	
Number of employees	No of units	% of units	No of units	% of units
1-5	35	38.5	195	29.7
6-10	34	37.4	218	33.2
11-15	9	9.9	]	
16-20	6	6.6	] 158	24.0
21-25	2	2.2	]	
26+	5	5.5	86	13.1
Total	91		657	

ranges from one to 35, with a mean of 8.99. Three quarters of the units provide employment to 10 or fewer workers, and these relatively small units in turn provide 45% of all employment. At the other extreme, ten units each have more than 20 workers, and together they employ 32.5% of all employees.

Table 8.6 also contains comparative data from a recent large-scale survey undertaken by the National Council of Applied Economic Research and the Friedrich-Naumann-Stiftung (NCAER 1993). This survey covered some 657 units in eight industrial groups[1] in 17 different locations, including Coimbatore, throughout India. Their results show a similar though less pronounced predominance of small units - in their sample 60% of units employ 10 or fewer workers. On the other hand, their survey also includes a much larger number of large units, employing more than 26 people. Part of the reason for the discrepancy may lie in the different sectors of manufacturing covered in the two surveys, and part may also be due to differences in the sample frameworks. The

[1] The groups are garments; plastics; paints; detergents; handtools; agricultural implements; electronics; and auto parts.

NCAER survey included a much smaller proportion of unregistered units - only 69 out of a total sample of 657 (or 10.5%) as opposed to 25 out of a total of 91 (27.5%) in the Coimbatore sample. The salient fact is that unregistered units tend to be tiny. For the sample of engineering

TABLE 8.7
Mean employment for registered, unregistered and factory units

Type of unit	Mean number of employees	S.D.	N
Registered SSI	8.73	5.19	56
Unregistered units	3.52	1.90	25
Factory and SSI reg	24.10	7.61	10

F ratio = 63.95 DF $_{2,88}$ Sig = .001

units in Coimbatore, unregistered units are appreciably smaller in size than registered small scale units; and in turn registered small scale units are appreciably smaller than those units which are also registered under the Factory Act, as shown in Table 8.7.

The majority of units are tiny in terms of the number of people employed. They are also tiny in terms of fixed investment. Table 8.8 shows the distribution of units by investment in plant and machinery. Investment levels for the whole sample vary considerably, from a minimum of Rs 5000 to a maximum of Rs 6 million, with a mean of Rs 448,000. 84% of the sample of engineering units have fixed investment of less than half a million rupees, which is remarkably similar to the NCAER sample where 87% of units fall into the same category of 'tiny' units. However, the NCAER sample contains a substantially larger proportion of units in the smallest size category, probably reflecting the different industrial composition of the two samples. It might be expected, a priori, that engineering units would

have a higher level of investment than units in, for example, the garment or handtools sectors. In both samples the salient feature is the concentration of units in the tiny sector. Among Coimbatore engineering units, only one had capital investment of more than Rs 3.5 million; in the NCAER sample, only three firms fall into this size category. Very few units, in other words, come anywhere near the investment ceiling for registered small scale industries which currently stands

TABLE 8.8
Distribution of units by level of investment

	Coimbatore		NCAER	
Investment in plant and machinery (Rs 00,000)	Number of units	%	Number of units	%
Up to 2	53	58.2	405	67.8
2.1- 5.00	24	26.4	113	18.9
5.1 - 10.0	8	8.8	36	6.0
10.1 - 35.0	5	5.5	40	6.7
35.1 +	1	1.1	3	0.5
Total	91		597	

at Rs 6 million. The existence of this ceiling has been widely criticised because once it has been exceeded, units are no longer able to claim special treatment. The ceiling is therefore seen as a disincentive to the growth of individual units. What the data from both the Coimbatore and the NCAER samples suggest, is that this 'disincentive' effect is highly marginal. Not only do the overwhelming majority of units in Coimbatore fall below the ceiling of Rs 6 million, which has operated since 1992, but the overwhelming majority fall below the ceiling of Rs 3.5 million that prevailed between 1985 and 1992. If there is a disincentive, it affects the minority of large, small enterprises. It might be claimed that the limit prevents small firms from adopting the most modern technology. A modern CNC (computer numerically controlled) machine tool costs some Rs 1.5 million, so the acquisition of modern equipment could quickly take a firm up to the limit. In practice

however, few small firms are in a position to be be able to afford such investments. If there are limits to the installation of new machinery, they lie in the capital market and the highly protected nature of the Indian economy

The differences noted above in terms of employment between registered and unregistered units are also evident in relation to investment levels. The category of unregistered engineering units has a mean investment level of Rs 83,600; the group of registered small units has a mean of Rs 447,732, while the Factory and small scale industry registered units have a mean fixed investment of Rs 1.4 million. Analysis of variance reveals that there is a statistically significant difference (F ratio = 9.498, $DF_{2,88}$ significant at 0.005) between the three groups.

A final measure of size is the value of sales. A question was asked about monthly sales, and the results are reproduced in Table 8.9. The value of sales varies from a

TABLE 8.9
Value of monthly sales

Average monthly value of sales (Rs)	Number of units	%
Less than 50,000	53	58.2
50,001 - 100,000	20	22.0
100,001 - 150,000	6	6.6
150,001 - 200,000	4	4.4
200,001 +	8	8.8
TOTAL	91	100

minimum of Rs 2500 to a maximum of Rs 600,000, with a mean for the total sample of Rs 79,802. The NCAER survey does not provide a breakdown of sales figures, but it reports a mean monthly value of production for units in its sample of Rs 66,000. It will be seen from Table 7.9 that rather more than half of the sample

have sales of less than Rs 50,000 per month, and 80% have sales of less than Rs 100,000. A select group of eight units, on the other hand, have sales in excess of Rs 200,000 per month. Again, there are statistically significant differences between the groups of small units. Unregistered units tend to have lower sales values - mean sales are Rs 17,080, compared with a mean for registered small units of Rs 92,232. Units which are registered as small industries and also come under the Factory Act tend to have much larger sales, the mean being Rs 167,000. Analysis of variance indicates that these means are significantly different (F ratio = 9.34: with $DF_{2,88}$ significant at 0.005).

The three measures of size considered above reveal a consistent pattern, in which a majority of the units are 'tiny', whether measured in terms of employment, fixed investment or sales. The pattern is brought out in Table 8.10 which categorises units according to their investment levels. "Tiny" units, defined as those with fixed investment of up to Rs 500,000, constitute 84% of all units in the sample,

TABLE 8.10
Employment and sales by investment levels

Fixed investment level (Rs 00,000)	No. of units	%	% total employment	% total sales
Up to 2	53	58.2	40.1	38.3
2.1 - 5.0	24	26.4	30.3	37.2
5.1 - 10	8	8.8	13.7	4.1
10.1 - 35	5	5.5	14.7	16.3
35.1+	1	1.1	1.2	4.0
Total	91	100	100	100

and contribute 70% of employment and 75% of sales generated by all of the units in the sample. "Tiny" units predominate with the unregistered units comprising the tiniest; 84% employ fewer than five workers, and 96% have less than Rs 200,000 investment in plant and machinery. At the other end of the scale is a

small group of large units - which might more accurately be described as small factories. Such units, with fixed investment of more than Rs 1 million, constitute only 7% of the sample, but generate 16% of total employment, and 20% of total sales.

Production activities

The units in the sample cover a wide variety of activities. Table 8.11 provides some idea of this diversity, classifying units according to their principal activity.

TABLE 8.11
Units by major type of activity

Main activity/product	Number of units	Main activity/product	Number of units
Pumps	13	Sheet metal working	4
Textile machinery/spares	9	Moulds and dies	3
Castings	8	Springs	3
Machining	7	Compressors/motors	3
Agricultural machinery	7	Electroplating	2
Gears/gear assemblies	6	Plastic moulding machinery	2
Welding	6	Steel furniture	2
Wet grinders	5	Other	11

Among the category of 'other' are units making foundry equipment, electric timers, paint, washing machines and gem hardening equipment. Out of the 91 units, 23 or 25% produce reserved items.

We can distinguish between those units which specialise in manufacturing finished products, such as pumps or wet grinders (used by South Indian households for grinding lentils and particularly rice in the preparation of idli) or components; and those which specialise in performing a particular process such as turning and grinding, or welding. The two categories of product and process specialisation are not mutually exclusive; among the welding units for example, are several with

a profitable sideline in the making of security grilles for doors and windows, and decorative ironwork. An alternative and more useful distinction can be made between those units which make finished products and those which are involved in making intermediate products (i.e. components) or performing intermediate processes. Of the total sample 34 units (37%) can be categorised as producers of finished products, while 57 (63%) are intermediate producers.

There is an interesting relationship between type of specialisation and size of unit, as shown in Table 8.12. What this suggests is that tiny units with five or fewer

TABLE 8.12
Type of specialisation by size of unit

Type of specialisation:	Number of units by size of unit (employees) < 6	6-11	12+
Finished products	7 (20.0)	19 (54.3)	8 (38.1)
Intermediate goods	28 (80.0)	16 (45.7)	13 (61.9)

employees are more likely to specialise in the production of intermediate goods, than either small or larger units. There is clearly no simple relationship between size and specialisation, but statistically the data in Table 8.12 are significant - the Chi-squared value is 8.7963 with two degrees of freedom, which is significant at 0.01.

As we have already seen there is a wide variation in the level of investment in plant and equipment among the sample units. Only 4 units make no use of powered machinery. Two of these are tiny welding units which use oxy-acetylene equipment (the other welding units use electric arc equipment), while the other two units are small foundries. Some idea of the type of equipment can be gleaned from Table 8.13 which indicates the more common kinds of machinery in

TABLE 8.13
Usage of types of powered machinery

Type of equipment	No. of units
Lathe	45
Drilling machine	54
Grinding machine	31
Welding equipment	26
Metal cutting machine	26
Milling machinery	12
Power/hydraulic press	13

by these units. Typically the units use a combination of equipment, as indicated in Table 8.14. Most workshops tend to have several different pieces of machinery, none of which could be described even remotely as high-tech. A number of the larger units have automatic or semi-automatic lathes, but none has anything

TABLE 8.14
Common machine combinations

Machine combinations	Number of units
Lathe, drilling, grinding and welding equipment	14
Lathe, drilling and grinding	12
Lathe and drilling machinery	11
Lathe, drilling and milling machinery	6
Lathe, drilling and welding	6
Drilling and welding equipment	6
Milling and grinding machinery	7
Drilling, cutting and grinding machinery	4
Cutting, welding and drilling machinery	4
Total	70

approaching a computer numerically controlled machine tool, which, in terms of cost is way beyond the means of the units in this sample. In general the type of machinery in use is old - indeed obsolete - and often difficult to maintain because of badly worn and missing parts. The quality and consistency of output

consequently tends to be low and this is one of the major complaints levelled at the small manufacturing sector. However, the type of machinery in use lends itself to a variety of different end uses, and as such could be described as highly flexible. This goes against the grain of some contemporary writers who regard technological flexibility as contingent on the greater use of microprocessors and high-tech manufacturing systems (Leborgne and Lipietz 1988: 276). As Gertler has remarked, even the 'lowly screwdriver' is a potentially flexible tool, with a variety of possible applications (Gertler 1988: 429).

That there is 'flexibility' in production is borne out by some of the survey results. Among the units in Coimbatore, 31 (34%) are currently involved in a different activity compared with what they did when they were originally set up. One unit, for example, was originally involved in making perforations in sheet metals and has now developed into a manufacturer of washing machines. It buys in motors from other manufacturers, but the basic in-house processes remain essentially those of working with sheet metals, to make the drum and the body. The shift from a very limited activity to a more profitable line was aided in this particular case, not by any technological development, but by building on the existing equipment of the unit, and in particular by exploiting the existing metal working skills of the labour force. Gertler's comment on flexible technology seems to be particularly apposite:

> "At a very basic level, flexible technologies have been with us, albeit in more simplified form at least since the industrial revolution. Examples would include the lathe, whose product range is considerable, and limited largely by the ingenuity and skill of the operator" (Gertler 1988 : 429).

It is to the skills and characteristics of the labour force that we now turn.

The Labour Force

The original intention of the survey was to elicit information on precisely what jobs were performed by individual workers, in order to classify the labour force into the familiar categories of skilled, semi-skilled and unskilled. It quickly became apparent that such an approach was inappropriate. It is not difficult to distinguish between the skilled machine operator, and the unskilled general labourer involved in fetching and carrying. It is more difficult to distinguish the semi-skilled worker from the skilled worker. The categories which are familiar to social scientists through census classifications are not objectively defined categories, but assessments of the degree of training and experience required to perform a particular activity or set of activities. The difficulty in applying such fine distinctions to small scale units is that smallness means that there is a premium on being able to engage in a variety of different activities as and when required. Judging whether a particular individual is skilled or semi-skilled requires a considerable amount of data on how that individual's time is allocated between various activities. Collecting that data proved to be very time-consuming, particularly when some of the early interviews involved units with more than a dozen employees. To get round these difficulties, we resorted to the simpler expedient of asking the owner how many employees were skilled, semi-skilled and unskilled. Even this simplification proved problematical, as a number of proprietors seemed equally unsure about the definition of 'semi-skilled'. It proved much easier to ask simply about the number of skilled and unskilled workers. This appeared to have greater resonance among the respondents, and broadly corresponded to the distinction between workers who could operate machinery effectively and without supervision, and those who could not. The gap between the former and the latter should not be underestimated. A "skilled" machine operator requires not just experience in the use of particular types of machines, but also requires some understanding of the characteristics of different types of metals, and a passing familiarity with the concepts of measurement. The turner

must know at what speed to operate the lathe for a particular job, and, with the kind of non-automatic lathes in general use, set the gears manually to produce the appropriate speed of rotation. Whether the machined product is acceptable depends on the worker's ability to make fine measurements, and equally fine adjustments on machinery that is old, worn and temperamental. Skilled workers are highly skilled, and highly prized by their employers.

Using this broad distinction between the skilled machine operator and the unskilled general labourer, we find that out of a total permanent labour force of 817 employees, 65% are deemed to be skilled workers, and 35% unskilled labour.

TABLE 8.15
Usage of skilled workers

% of skilled workers	Number of units	%
< 25%	6	6.6
26 - 50%	28	30.8
51 - 75%	25	27.5
> 76%	32	35.2

The figure for skilled labour may seem extraordinarily high, but it is not out of line with the findings of the NCAER survey, which classified 66.7% of workers in its sample as being skilled and semi-skilled (NCAER 1993: 115). The utilisation of skilled workers is shown in Table 8.15. In two thirds of the units, more than half the workforce is considered skilled, while in one third of the units, more than three-quarters of workers are considered as skilled. There are no clear relationships between the proportion of skilled workers and size of unit, however size is measured. Table 8.16 shows the mean percentage of skilled workers by level of investment in plant and machinery. The data suggests that it is the tiny and the large units that employ a larger proportion of skilled workers, but analysis of variance suggests that the differences in the means are not

TABLE 8.16
Employment of skilled workers by size of unit

Size (investment in plant and machinery, Rs)	Mean % skilled workers	Sd	N
< 200,000	67.9	27.0	53
200,001 - 500,000	58.1	27.4	24
> 500,001	68.3	21.5	14

Analysis of variance $DF_{2,88}$ F= 1.265. Sig = 0.3

significant. We have to conclude that employment of skilled workers is independent of size.

The educational background of the workforce provides a slightly different way of looking at the skills of employees. We have already seen that employers tend to be a relatively highly educated group, and this seems to be true also of the people they employ. Almost half of those employed (44%) have completed secondary

TABLE 8.17
Educational qualifications of employees

Workers with:	Number of workers	% of total
Secondary School certificate	195	23.9
Industrial Training Institute cert	122	14.9
Degree/diploma	42	5.1
None of above	458	56.1
TOTAL	817	100

or higher level of education, with 5% holding a degree or equivalent diploma. This latter figure includes some who are related to the owner, but mostly they are

non-family members, who see employment in a small enterprise as a way of developing the hands-on experience needed to start up on their own account. [2]

That a large part of the labour force is well-educated seems to reflect the particular recruitment practices employed by small units. The recruitment of unskilled general labour is not a problem, as such labour is both plentiful and readily available locally. There is however, a serious problem mentioned by many of the employers in the survey, of recruiting skilled workers. James Berna in his study of entrepreneurs in Madras and Coimbatore in the 1950s remarked that

> "... the general policy of the firms studied is to hire "raw hands" that is village boys with no previous factory experience, and train them in the plant" (Berna 1960 : 96).

Berna's study was confined to moderately sized Coimbatore factories, employing 50 to 250 workers. Among the sample covered in the present survey, none actively recruited from any distance, but the owners showed a distinct preference for recruiting educated young men who could be given on the job training. In a situation of short supply, workers with skills and experience tend to look to the large engineering companies able to offer better rates of pay with bonuses - as well as other perks, such as canteens. Small units seem to create their own skilled labour and they do so by recruiting workers with a good educational background, in the belief that such people possess not just the basic skills of literacy and numeracy, but that they are more adaptable and quicker to learn. This is not a strategy of choice, rather it is a matter of Hobson's choice, the result of a shortage of skilled, trained manual workers. Training is not something that most small proprietors are either well-equipped or anxious to undertake. Training is costly, not only in terms of time, but also in terms of wasted raw materials, of broken and

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[2] The general issue of support, including training, for small industries in Coimbatore is considered in more detail in a later chapter.

damaged machinery. Most small employers are noticeably ambivalent about the question of training. On the one hand, most recognise the need for training to equip themselves with competent machine operators, but there is also an apprehension that, once trained, workers will move on to better paid work elsewhere, or will set up on their own account in competition with their former employer. Training is regarded as a burden, especially by the smaller units; it is among the units with fewer than ten employees, that complaints about the shortage and high cost of skilled labour were most common. Interestingly enough it is also among this group of units that the employment of family workers tends to be relatively high. Only a small proportion of owners in the sample - 23%, or 21 out of 91 units - have members of their family working with or for them, and they tend to be concentrated in the smaller sized units. There may be several reasons for this, including the possibility that family labour may be cheaper labour; that preference is given to employing family members because they are known individuals, rather than unknown outsiders, and there is also the possibility that family members may be preferred because, once trained, they can be prevailed upon to show greater loyalty than non-family members. Suffice it to say that recruitment of skilled labour is a problem for small units, a point that will be taken up again at a later stage.

Table 8.18 shows the mean level of employment of qualified workers (i.e. those

TABLE 8.18
Qualified workers by size of unit

Size category (employees)	Mean % educated workers	SD	N
< 5 workers	39.7	41.1	35
6 - 10 workers	45.5	36.9	35
> 11 workers	47.9	33.1	21
Total	43.8	37.5	91

who have completed secondary or higher education) by size group of unit, where size is measured in terms of the size of the workforce. The data suggest that the larger units tend to employ a larger proportion of more educated workers than the tiny units. However analysis of variance indicates that the differences in the means are not statistically significant. With $DF_{2,88}$ the F ratio is 0.36 which is not significant. Taking the specific case of workers with a degree/diploma, the mean percentage of such workers tends to be higher in small factories (i.e. those with more than 11 workers) than in the tiny units, as shown in Table 8.19. Statistically, however the differences in the means between the

TABLE 8.19
Percent workers with degree/diploma, by size of unit

Size category (employment)	Mean % of workers with degree/diploma	SD	N
< 5	4.3	17.7	35
6 - 10	4.4	10.2	34
> 11	7.5	9.0	22
Total	5.1	13.3	91

Analysis of variance; $DF_{2,88}$ F ratio = 0.4

groups is not significant.

Flexibility

What we have seen from the foregoing is that the technology used by small engineering units is characteristically flexible. None of the machinery is 'dedicated' to a single purpose, but rather is of a general type that could be put to a range of uses, producing any number of components and finished goods. We have also seen that the labour force employed in these small units tends to be highly skilled and well-educated. Almost two-thirds of workers are deemed to be skilled, and in two thirds of the units, more than half the total workforce is skilled. Out of a

total of 817 employees, 43% have completed secondary or so form of further education. It would be tempting to conclude that just as the technology is flexible, so is labour. Asheim makes the point that 'labour flexibility' means different things to different people. He argues that there are two distinct elements to flexibility - functional flexibility "which concerns the skills of the workers and the number of different tasks they can perform"; and numerical flexibility which concerns the size of the workforce and the ease of adjusting numbers to changes in circumstances (Asheim 1992: 48).

On the question of functional flexibility, the basic point that needs to be emphasised is that the majority of units in the sample are small in terms of the total number of workers employed. As we saw above (Table 8.6) three-quarters of the units employ fewer than ten people, and rather more than a third employ fewer than five workers. Size alone suggests that in most units there is little room to permit individual workers to specialise in performing particular narrowly defined tasks. Rather, workers are likely to be expected to master a number of different activities. Indeed, observation showed that skilled workers were adept at operating different pieces of machinery, and moreover, they also engaged in helping unskilled workers with tasks such as loading and unloading, and fetching and carrying. Such functional flexibility is aided by the absence of work contracts, job specifications and trade union organisation. For most workers in small enterprises, the work is what the boss tells them to do. Nor is it just employees who work flexibly, but the proprietors themselves. In 77% of the units, the owner(s) not only looked after the paperwork, but was also actively involved in production on the shopfloor. As Table 8.20 shows, in the two smaller size categories, the majority of owners take part in the production process. Even among units with more than eleven employees, in more than half such units, the owner still took part on the shop floor. Statistically, the evidence suggests that there is a relationship between size and owner participation in production; the chi

square value for the tabulation is 6.339, with 2 DF, which is significant at the 0.05 level. This reinforces the point made earlier, that in small units, the bulk of

TABLE 8.20
Owners involvement in production by size of unit

Owner's role in production	Size of unit (employees): < 5	6 - 10	> 11	N
Yes	30 (85.7)	28 (80.0)	12 (57.1)	70 (76.9)
No	5 (14.3)	7 (20.0)	9 (42.9)	21 (23.1)

(Numbers in brackets are percentages of column totals)

the sample, there is likely to be a high level of functional flexibility. In small and tiny units, there is limited scope for an advanced intra-firm division of labour, beyond the elemental division between skilled and unskilled tasks. It is in the interests of the employer to make the maximum possible use of labour, especially valuable skilled labour, by encouraging maximum flexibility. As the size of firm increases, so does the scope for more pronounced internal specialisation by employees and by employer. What the data in Table 8.20 capture is the quantitative change in employer participation, but observation suggests there is also a qualitative change as size of unit increases. Among tiny and small units, the proprietor actively participates in the operation of machinery, whereas among the larger units, participation takes the form of supervision.

The second aspect of flexibility is numerical flexibility - the ability to adjust employment levels to changes in workload. One of the principal ways that small units can achieve this is through the use of occasional, or casual workers. 32 of the 91 units, 35% of the sample used such workers, with the number ranging from

TABLE 8.21
Use of casual workers by size of unit

	Size of unit (employees)			
	< 5	6 - 10	>11	N
Units without casual workers	25 (71.4)	23 (65.7)	11 (52.4)	59
Units with casual workers	10 (28.6)	12 (34.3)	10 (47.6)	32

(Numbers in brackets are percentages of column totals)

two to nine, with an average of 3.6 per unit. Invariably, occasional workers were recruited as general labourers, to help with such jobs as packing, loading and unloading. Table 8.21 shows the use of occasional workers by size of unit, where size is measured in terms of permanent workers. In the tiny category, 29% of units use casual workers, compared with 34% in the small unit group and 48 % among small factories. On the face of it, the larger units make greater use of occasional workers than the smaller ones. Statistically, however,

TABLE 8.22
Use of casual workers by investment level

	Size (fixed investment)			
	< 200,000 Rs	200,001 - 500,000 Rs	>500001	N
Units not using casual workers	41 (77.4)	12 (50.0)	6 (42.9)	59
Units using casual workers	12 (22.6)	12 (50.0)	8 (57.1)	32

(Numbers in brackets are percentages of column totals)

the differences are not significant. Chi-squared test indicates a value of 2.108, with 2 degrees of freedom, which is not significant. If however, we measure size in terms of capital investment, there is a statistically significant relationship between size and use of occasional workers. Table 8.22 shows that 23% of tiny units make

use of casual workers, compared with 50% of small units and 57% of small factories. A chi-squared test produces a value of 8.9286, which, with two degrees of freedom is significant at the 0.025 level. Owners of small factories tend to explain their use of casual labour by referring to the need to periodically hire additional labour to cope with packing and despatch of orders, and the unloading of supplies, which take the from of heavy and bulky materials. Presumably, the lower volume of production and sales among the tiny units means that there is less need to take on extra labour to deal with such eventualities.

Linkages

In this section, we examine the relationships between small units and their wider environment. Referring back to Table 8.11 showing the main products of the units in the sample, it is possible to identify various production linkages. There are, for example, specialised units making dies and moulds for foundries. The foundries in turn produce rough castings on order to other specialised workshops and pump manufacturers, who undertake grinding and drilling operations. To understand the organisation of small units, we concentrate in particular on their supply and market linkages. In doing so, we shall be concerned to see whether small units are subcontractors to larger units, or whether there is evidence of cooperation among specialised small units similar to that found in Italian industrial districts.

Supply linkages.

Of the 91 units in the sample, four units are involved in what is referred to as 'job work'. This refers to the practice in which a customer provides the raw materials needed to complete an order. It is a practice used by larger units to ensure that suppliers do not use materials of inferior quality. 87 units thus buy in their own

raw materials. For 59, or two-thirds of those units, the most important bought in materials are ferrous and non-ferrous metals. These include aluminium, caste iron, copper and especially steel, both mild and stainless, acquired in a bewildering variety of forms - plates, flats, angles, bars and rods. The remaining one third of units buy in, in addition to metals, a significant amount of previously manufactured parts and components. Included in this group are units making pumps and compressors. There are 16 units engaged in this type of activity. All of them rely on purchasing rough castings from local foundries, but they also buy in bearings, valves, pistons, springs, bolts and electrical wire. None of the units in the sample relied exclusively on bought in components. In all cases, the units are engaged in the process of manufacture, rather than simply assembling already finished components.

The inputs used by the sample firms are predominantly locally sourced, as shown

TABLE 8.23
Geographical sources of main inputs

Source of supply of main inputs	Number of units	%
Local	70	80.5
Tamil Nadu, outside Coimbatore	2	2.3
South India outside Tamil Nadu	2	2.3
Elsewhere in India	13	14.9
Total	87	100

Note: excludes 4 units engaged in job work

in Table 7.23. While 81% of units purchase their inputs from local sources, some units purchase from much further afield. Plastics, for example, are bought directly by two firms from a manufacturer in Madras. Several units buy bearings from manufacturers in Bombay, while one of the two electroplating units buys its supplies of chemicals from an import agency in Bombay.

Local suppliers fall into two categories. Firstly, suppliers can be local manufacturers. An obvious example are the foundries which are the principal suppliers to makers of pumps and compressors. Secondly, suppliers also take the form of merchants and traders. These are the principal suppliers of ferrous and non-ferrous metals, of the scrap used in some of the foundries, and of manufactured components, notably bearings - a monopoly of the large scale manufacturing sector - but also valves, seals, nuts and bolts - supplies which are themselves manufactured by local small units. Why some small units in the sample buy components such as valves, from traders while others buy directly from local small manufacturers is not entirely clear. What is clear is that traders and merchants play a very important role in supplying small industry with a large part of its raw material requirements. Coimbatore, as mentioned already, has a very large and diverse trading sector. The Steel Authority of India has a substantial depot in Coimbatore, which supplies large engineering factories and traders with a range of ferrous products. None of the small scale units in our survey dealt directly with SAIL, nor did any of them make any use of the SIDCO depot, set up specifically to supply small units. Rather, it tends to be the smaller private trading organisations which are important. Some idea of the size of this trading sector can be gleaned from the Signpost Industrial Directory of Coimbatore[3]. This commercially produced directory lists, among other things, 81 steel traders, 14 distributors of non-ferrous metals, 25 scrap metal dealers, and 62 distributors of ball bearings. This multiplicity of suppliers may be significant - it suggests a highly competitive trading sector, and competition between traders reduces the likelihood of being able to resort to monopsonistic practices to the detriment of small scale producers.

[3] The Directory makes no charge for entries, so it does not necessarily discriminate against the small trader. It is not, however, by any means a comprehensive listing of manufacturers and suppliers, but it does provide some indication of the scope of industry and industrial support in Coimbatore.

Market Linkage

Table 8.24 reveals the main customers for the sample engineering units. What is apparent is that market linkages are complex. Holmstrom's generalisation that "(T)ypically, small firms depend on large ones for markets" is far too general as a statement of the pattern of linkages in the small scale sector (Holmstrom 1984 :112). The single most important outlet for small units is the large factory sector. A quarter of units sell their output to the factory sector, but a further 21% sell to other small units. The third most important market consists of traders who provide the main outlet for 12% of the units in the sample. Open market sales refer to sales directly to (usually) private buyers. Of the eight units using the open market, one produces steel furniture, and five are welding units, where part of the business comes from providing a service to other industries, including transport,

TABLE 8.24
Main outlets

Main outlet	Number of units	%
Small units	19	20.9
Factory units	21	23.1
Traders	11	12.1
Open market	8	8.8
Government	1	1.1
Factory and small units	11	12.1
Traders and open market	6	6.6
Factory and small units and traders	6	6.6
Factory units and traders	2	2.2
Small units and traders	6	6.6
Total	91	100

and part arises from the making of customised security grilles and decorative ironwork. The State Government is the main, indeed sole, customer for one unit, which manufactures agricultural spraying equipment. For a third of the units,

there is no single major outlet; rather these units supply some combination of small/large units and traders.

One factor which may help to cut through the apparent complexity of market outlets is the type of activity that small units are engaged in. Those which produce finished goods might be expected to have strong links with traders, while those specialising in producing intermediate goods are likely to be

TABLE 8.25
Main outlet for finished and intermediate goods producers

Main Customer	Finished goods producers		Intermediate producers	
	Number	%	Number	%
Small units	2	5.9	17	29.8
Factory units	6	17.6	15	15.3
Traders	7	20.6	4	7.0
Open market	4	11.8	4	7.0
Government	1	2.9	0	
Factory and small units	2	5.9	9	15.8
Traders and open market	6	17.6	0	
Factory and small units and traders	2	5.9	4	7.0
Factory units and traders	1	2.9	1	1.8
Small units and traders	3	8.8	3	5.3
Total	34	100	57	100

most strongly linked to other small and/ or factory units. Table 8.25 suggests that this is indeed the case. Among producers of finished goods half sell primarily to traders and/or the open market. Among intermediate producers, two-thirds have linkages with the categories of small and/or large units. To test whether these differences are significant, it has been necessary to amalgamate some of the categories as in Table 8.26 which distinguishes sales to other small units, to factory units, to traders and/or the open market, while the various combinations of small/large/traders are included in the category 'other'. What we see from Table 8.26 is that the main outlet for units making finished products is the category of

'traders and/ or open market'. Half of the finished goods producers - i.e. makers of pumps, wet grinders, washing machines and agricultural machinery - sell their products in this way. By comparison, units which make intermediate goods sell more or less equally to

TABLE 8.26
Main outlet for finished and intermediate goods producers

Main customer	Units producing: Finished products	Intermediate products
Small units	2 (5.9)	17 (29.8)
Factory units	6 (17.6)	15 (26.3)
Traders and/or open market	17 (50.0)	8 (14.0)
Other	9 (26.5)	17 (29.8)
Total	34	57

small units, to factory units or to the combination category of 'other'. A Chi squared test reveals that there is a highly significant difference in the marketing linkages of finished and intermediate goods producers. With 3 degrees of freedom, the chi squared value is 16.651, which is highly significant at 0.005.

What light does this data throw on the issue of subcontracting? It will be recalled that a particularly prevalent view, represented by Holmstrom among others, is that small units are essentially subcontractors to large factory units. Small units are seen either to produce components or provide a particular service to the large firms in the factory sector; while small units producing finished goods sell to big companies which market those goods under their own brand name (Kurien 1992: 298/299). The motivation for such subcontracting is seen to lie in the desire of the factory sector to capitalise on the lower labour costs, absence of unions, and lower overheads in the small scale sector. Subcontracting thus boosts the profits of the large scale sector at the expense of the small, thereby preventing a dynamic

growth process from taking place in the small sector. There are two separate issues here. One concerns the extent of subcontracting. To what extent do small units have close links with the large scale sector? The second and separate issue concerns the consequences for small units of subcontracting. As we saw in the case of Japan, subcontracting may be undertaken for reasons other than simply capturing the benefits of cheap unorganised labour, and it can be beneficial for small units, inasmuch as such linkages can promote technology transfer. For the moment we simply consider the extent and nature of subcontracting.

Whether a unit can be classified as a 'subcontractor' depends in part on how one chooses to define the term. There is no definition of subcontractor which unambiguously distinguishes 'subcontractor' from 'regular supplier'. In narrow legalistic terms, subcontracting implies the existence of a contract for the supply of goods and /or services over a period of time. If we accept that definition, then only three of our sample of 91 units is engaged in subcontracting, all being units engaged in job work for large factories. If we broaden the definition to refer to units which supply another unit or small group of units, and have been doing so regularly for some time, we arrive at a rather larger estimate of the extent of subcontracting. Applying this definition firstly to units producing finished goods, we find that twelve of our 34 units can be deemed to be subcontractors (Table 8.27). Two units are 'tied' to specific firms in the factory sector. Both manufacture pumpsets, and the whole of their output is regularly sold to a particular large manufacturer who markets the pumps under its own brand name. Four other pumpset/compressor manufacturers can be regarded as subcontractors, having regular sales to a small number of specific large producers in this field. The remaining six units have maintained market links with a small group of traders, through whom they market their wet grinders, and agricultural machinery.

Surprisingly perhaps, subcontracting among producers of intermediate goods is no more common than among finished goods producers. Seventeen out of a total of

TABLE 8.27
Units engaged in subcontracting

Subcontracting by:	finished goods producers Number of units	intermediate goods producers Number of units
Job work for factory unit	0	4
Job work for small units	0	1
Tied subcontractors - factory unit	2	3
Tied subcontractors - small units	0	0
Subcontractors to factory units	4	3
Subcontractors to small units	0	5
Subcontractors to traders	6	1
Total	12	17

57 units in this category can be described as subcontractors. Four units undertake job work for large factories - two make spare parts for specific textile mills, and the third undertakes grinding work for Textool Ltd. This was the only unit in the sample which was able to report receiving any positive help - in the form of technical advice - from its parent company. A further unit, also a grinding and finishing specialist, is engaged in job work for a relatively small number of small units. The tied units include two which make components for a large engineering firm, and a small foundry. Of the five units serving other small industries, most are specialised machining shops.

In total, out of 91 units, we can describe 29 as subcontractors, 32% of the total. This result is comparable with John Harriss' study of light engineering in Coimbatore, which found that in a sample of registered and unregistered units, 35% were engaged in subcontracting (Harriss 1982: 952). His conclusion that

"subcontracting in the engineering industry in Coimbatore is extensive" seems somewhat at odds with his own findings, as well as those of the present survey (Harriss 1982: 953). It is of course feasible that subcontracting is far more widespread than the data presented above suggest; those units which supply other small units may in turn subcontract to other large units. The possibility of such chains feeding in to the large units cannot be discounted, but such chains are difficult to uncover in a sample of units.

For the sample in this study, roughly a third of the total units are deemed to be subcontractors, in the sense of maintaining a relationship with another specific unit, or small group of units over a reasonably prolonged period. Not all of these units subcontract to large factories, and the reasons for subcontracting are not necessarily to do with capitalising on cheap labour. Sixteen out of the twenty nine subcontractors - 55% - to the factory and the small scale sector are specialist machining and engineering shops, and it is perhaps as much their expertise as their cheap labour and low overheads that is in demand.

The majority of units are not subcontractors, but suppliers. They supply finished goods, components or services on order to a group or groups of customers whose composition changes over time. While some concentrate on seeking work from a range of large units, others cultivate contacts with other small units and more than a third of the sample (Table 8.24) seek orders from a diversity of sources - from small and large, from traders and middlemen, as well as on the open market. FPS, for example, employs twelve workers making gears and gear assemblies. The unit secures occasional orders from large engineering companies, but the proprietor also sells through traders and directly to other small units who require replacement parts for their own machinery. FPS seems to be typical of many of the small units in Ganapathi, seeking orders from as wide a range of outlets as possible. Subcontractors and suppliers operate in highly competitive markets, but the

difference is that subcontractors enjoy the benefits of regular orders. Suppliers on the other hand lack stable marketing arrangements. Whether this difference affects the growth possibilities of small units is a question we return to later.

A final aspect of marketing among our sample firms has a more directly geographical dimension. It is often assumed that small units produce and sell in predominantly local markets. This is not wholly true for this sample. For the sample as a whole the sales profile was that on average, Coimbatore accounted for 57% of sales, the rest of the state for 19% and the rest of India for 24%. Table 8.28 gives a breakdown of the basic data. 29 units (32%) sell their

TABLE 8.28
Geographical distribution of sales

% of sales	Number of units with sales: within Coimbatore	Tamil Nadu outside Coimbatore	Rest of India
0	8	47	43
1 - 25%	17	15	16
26 - 50%	20	20	18
51 - 75%	12	4	5
>76 %	34	5	9

entire output within Coimbatore, while 45 units, half the total in the sample, dispose of less than half of their production locally. 44 units sell in the rest of the state outside Coimbatore, and 48 sell some part of their production in the rest of India. In the main, sales to the rest of India tend to be concentrated in other Southern states, especially the neighbouring state of Kerala, and to a lesser extent in Karnataka and Andhra Pradesh.

One factor that may discriminate between local and non-local sales is the type of production. It might be expected that intermediate goods producers will tend to

sell on a more localised basis than those units producing finished goods. Table 8.29 reveals that this is indeed the case. Sales in Coimbatore for finished goods

TABLE 8.29
Local sales by finished and intermediate goods producers

	Mean % of sales within Coimbatore	N
Finished goods	36.5	34
Intermediate products	70.1	57
Total	57.5	91

average 36.5%, while for intermediate producers, local sales account for 70%. Statistically, the differences in means are highly significant - the F ratio is 21.812, with $DF_{1,89}$, which is highly significant at the 0.001 level. There also seems to be a relationship between size of unit and the level of sales. Defining size by size of workforce, tiny units, with fewer than five employees have a higher mean level of local sales, than either small units (6 to 10 employees) or large units with 11 or more workers. When we control for type of production activity, size turns out to have no significance in statistical terms. We may conclude that type of activity is more important than size in explaining the level of local/non-local sales.

In this chapter we have attempted to build up a picture of the organisation of light engineering units in Ganapathi. The area contains both small workshops, as well as medium and large factories. Among the numerous small scale enterprises, there is considerable evidence of inter-firm division of labour, with some units specialising in the manufacture of particular components, others providing equally specialised engineering services. A second category of units concentrates on the manufacture of finished goods, buying in components - either directly, or indirectly through traders - produced by other small firms. Intermediate producers have strong local linkages with other small units, with large factory units and with

the trading community. Producers of finished goods have their roots in locally produced components, but their market is geographically more extensive. Small manufacturers are not wholly dependent on large factory units. Rather they exist within a network of relationships; they interact with each other, with large units and with the trading community. There are strong competitive pressures, both in product markets, and in the market for labour.

The picture of a network of small, highly competitive and specialised producers using general purpose machinery and highly skilled and adaptable labour points in the direction of a flexibly specialised industrial district, comparable with those described for Italy, Southern Germany and elsewhere. Before jumping to the conclusion that flexible specialisation is an accurate characterisation of small industrial producers in Coimbatore, we need to extend the analysis a bit further. Descriptions of flexibly specialised industrial agglomerations lay great emphasis on the way that raw competition is moderated by cooperative forms of behaviour. Through cooperation, small firms are collectively able to enjoy access to technical and market intelligence, which individually they are unable to enjoy. Collaborative behaviour ensures the survival of individual firms and enhances the competitiveness of the collectivity, enabling constituent enterprises to accumulate and grow. In the next chapter, we shall examine the issues of growth.

CHAPTER 9 THE GROWTH OF SMALL ENGINEERING UNITS

Thus far we have concentrated on building up a picture of the structure and organisation of light engineering units in Coimbatore. The picture that emerges is of an agglomeration of small units with some of the elements of 'flexible specialisation'. These units employ a highly skilled and well educated labour force, working in specialised activities with linkages both with each other, with large factories and with the trading community. Specialisation and division of labour among small units, evident in the types of specific activities they undertake, appears to be a relatively recent phenomenon. Writing in 1960, James Berna remarked on

> "..the marked tendency towards "self-sufficiency" on the part of even the smallest engineering unit. A visitor to the firms studied is immediately struck by the fact, for instance, that each small manufacturer has his own foundry complete with cupola, even though it be of only one-half ton capacity and used for casting only every ten days.... There are understandable reasons for the present situation. Until recently light engineering industry in the region was not sufficiently well developed to make it worthwhile for anyone to specialise in casting only" (Berna 1960: 99/100).

That self-sufficiency no longer exists. The growth of industry in post-war Coimbatore has permitted and encouraged a much greater division of labour, such that today there are units which undertake only casting, some specialising in aluminium die casting, others in cast iron, and several that specialise in the casting of special alloys. Many other units, as we have seen, also concentrate on a particular process such as the drilling and grinding of components and castings, electroplating, the cutting of gear wheels, while others specialise in manufacturing particular components or finished goods. Specialisation by process and by product is well developed. One of the consequences is that the conditions of entry into light engineering, although still higher than in other areas of small scale manufacture, are probably lower than they used to be. Because units no longer

need to be "self-sufficient", they no longer need substantial amounts of capital to set up their own foundry, or to make all the components required in the manufacturing process. Lower entry conditions in turn make it easier for more small specialised units to proliferate, but as the number of units multiplies, competition inevitably sharpens. The smaller foundries in Coimbatore compete with each other for the business of both large and small units, but they also face competition from the large foundries in the city. The makers of pumpsets likewise face stiff competition from the 400 or so other local manufacturers. Such competition can be the spur to innovation, encouraging the adoption of improved techniques and newer technologies but it can also be pernicious, undermining the viability of small units with their limited access to resources, forestalling investment and growth. Competition can encourage accumulation and development, but it can also be destructive.

In this section, we consider the growth experience of our sample small units. Sample surveys are not the best method of examining the dynamics of growth. They provide a snapshot at a particular point in time, when what we need is in the nature of a history of small units and their experience over time. We can go some way to shifting from a static to a dynamic analysis by incorporating questions about change - especially changes in investment, in employment and in the types of activity units engage in - in order to assess whether a process of development has taken place.

Table 9.1 shows responses to a question about changes in the number of (permanent) employees and in the stock of powered machinery since the unit was first established. It will be seen that rather more than half of the units in the sample have increased their level of employment, while 6 units have contracted and now employ fewer people than when they were first established. Table 9.1

also shows that just over a third of the units have increased the stock of machinery at their disposal, while two thirds continue to use the same

TABLE 9.1
Changes in employment and investment

	Change in the number of employees		Change in stock of machinery	
	No. of units	%	No. of units	%
Increase	54	59.3	34	37.4
Decrease	6	6.6	0	0
No change	31	34.1	57	62.6
Total	91	100	91	100

type and number of machines as at their foundation. Of the 34 units which have expanded their stock of machinery, 4 have multiplied the existing type of machines, for example adding an additional lathe; 27 units have diversified their range of machines, while the remaining 3 have adopted both strategies.

Table 9.2 shows the relationship between these two dimensions of change. 24 units (26% of the sample) now employ more workers and at the same time have increased their investment in machinery, while a further

TABLE 9.2
Relationship between change in employment and in investment

Change in number of employees:	Changes in the stock of powered machinery: Increase	No change
Increase	24 (26.4)	30 (33.0)
Decrease	0	6 (6.6)
No change	10 (11.0)	21 (23.1)

(Figures in brackets are percentages of the total sample)

30 units have increased their labour force but without any additional investment in plant. This may reflect either a shift to more labour intensive activities, or a better

use of existing capacity. A further ten units have invested in additional plant, but without expanding the size of the labour force; all are units which have diversified the range of installed machinery. That additional new machinery is operated by the same group of workers is a further pointer to the existence of a high level of functional flexibility. Six units in the sample employ less labour than they used to, and none has increased investment. There is no common characteristic to all of these units: one is a tiny unregistered unit, while the other five are more substantial and seemingly viable units, employing between four and thirteen employees. The final group of units comprise 21 firms which continue to operate with the same number of workers and the same level of investment as when they began. The pattern of change is thus varied. Almost three-quarters of the units (64) have expanded their labour force and/or their level of investment while 21 show no change and a small minority of 6 units have shed labour.

The interesting question is whether we can explain why some units have grown and others have not. In trying to answer that we need to bear two points in mind. First, we need to recognise that some of the significant determinants of firm growth are beyond the control of the individual proprietor. Growth is conditioned by the level of demand and the state of the economy generally which the individual owner has to take as given. A poor monsoon may depress farmers' incomes and reduce the demand for agricultural machinery, and there may be little the small manufacturer can do about that. But even if, secondly, market conditions are favourable, and our proprietor has access to the necessary capital to permit expansion, we should be wary of assuming that the aim of all small manufacturers is to grow and expand. In discussing women's employment activities, Grown and Sebstad usefully distringuish between survival as a basic goal (Grown and Sebstad 1989: 941). Once survival is assured, then the goal may switch to security, where an entrepreneur may try to diversify into new markets. And finally, for those who have achieved security, the goal may then shift towards growth. Growth and

accumulation is not necessarily the principal objective of small firms. Growth can magnify the problems and difficulties - of labour recruitment, of access to markets and suppliers, of opportunism, cheating and sharp practice that may beset the owner of the small enterprise. Context is also important here, for where firms exist within a cooperative network, the growth of the individual unit may be less problematical than in those circumstances where the unit cannot rely on others to help and support.

With these caveats in mind, let us now look at some of the specific factors that might explain the observed pattern of growth. One factor that may influence growth is the length of time the unit has existed. Older units might be more likely to have grown compared with younger units, if only because older units have had more time in which to build a network of contacts, to establish a reputation and so

TABLE 9.3
Change in size of workforce, by age of unit

Change in size of workforce:	Age of unit in years: < 3	4-7	8-11	>12
Increase	5 (38.5)	21 (63.6)	16 (66.7)	12 (57.1)
No change	7 (53.8)	11 (33.3)	7 (29.2)	6 (28.6)
Decrease	1 (7.7)	1 (3.0)	1 (4.2)	3 (14.3)
Total	13	33	24	21

(Numbers in brackets are percentages of column totals)

build up sales. Table 9.3 shows the number of units in different age categories, and changes in the size of the workforce. There is little suggestion in the data that longer established units are more likely to have witnessed growth. Statistically, a chi-squared test bears this out. Collapsing the 'no change' and the 'decrease' categories into a single category to avoid cells with fewer than 5 observations, chi-squared is 3.177 with 3 degrees of freedom, which is not significant. Similarly there is no statistical relationship between increases in the stock of machinery, and age of unit (Table 9.4).

TABLE 9.4
Change in investment level and age of unit

Change in stock machinery:	< 3 years	Age of units: 4/7years	8/12 years	>12 years
Increase	4 (30.8)	12 (36.4)	10 (41.7)	8 (38.1)
No change	9 (69.2)	21 (63.6	14 (58.3)	13 (61.9)

Chi-squared = 0.45035 3 degrees of freedom Sig=0.9

The proportion of units that have increased their stock of machinery varies relatively little between the age categories. Nor is there any relationship between growth and the type of specialisation. 59% of units which specialise in making finished products have increased their workforce, compared with 60% of intermediate producers.

We can quickly pass over the question of whether size is related to growth. Statistically, there is a highly significant relationship between size, whether measured in terms of capital or number of employees, but on reflection, such a statistical relationship is less than meaningful. The question asked in the survey was whether the size of the labour force and the stock of machinery had changed since the foundation of the unit. What the responses show is that the units that are now large in employment terms have indeed taken on more labour, and those that are now large in terms of their capital investment have invariably increased their inventory of plant and machinery. What this tells us is simply that today's larger units had humbler beginnings, but such an observation simply begs the question of why some units grow and others do not. Present size of unit cannot provide an explanation of that. With hindsight, it might have been more useful to have asked about changes in workforce and investment over a particular period of time - say the last two years- and to have then compared responses according to size.

We might ask whether market linkages have any influence over growth. Table 9.5 shows change in the size of the workforce, by main customer. It shows that 76% of units whose main customers comprise factory sector units have taken on more

TABLE 9.5
Change in employment by main customer

Change in workforce:	Main customer: Small unit	Factory unit	Traders/ open market	Large and small units	Other
Increase	8 (42.0)	16 (76.2)	11 (44.0)	9 (81.8)	10 (66.7)
Decrease	3 (15.8)	0	1 (4.0)	1 (9.1)	1 (6.7)
No change	8 (42.1)	5 (23.8)	13 (52.0)	1 (9.1)	4 (26.7)

(Numbers in brackets are percentages of column totals)

labour, and 82% of those whose customers are both large and small units have also grown. On the other hand, only 42% of units supplying other small units and 44% of those supplying traders and/or the open market have grown. To test for significance, we have to collapse the full table above, by combining the row categories of 'decrease' and 'no change', and combining the last two columns. With the reorganised data, the chi-squared value is 9.8859, with 4 degrees of freedom, which is significant at 0.05. This relationship holds even when we control for the effects of other factors. Among the 'other factors' which might help to explain the observed relationship between growth and type of customer is the size of unit. We have already pointed out that size is positively related to growth, but the exact meaning of that relationship is uncertain, given the question that was asked. However, if we control for size, we find that among 53 tiny units with less than Rs 200,000 investment, 22 (42%) have grown, while 31 (59%) have not (Table 9.6). Of those which have increased their workforce, a third supplied the factory sector, a further third supplied the mixed category, while only a fifth supplied traders, and less than a tenth supplied other small units. At the

TABLE 9.6
Changes in workforce by main customer among tiny units

Change in workforce:	Units with investment of < Rs 200,000 Main customer: Small units	Factory units	Traders/open market	Other	N
Increase	2 (9.1)	7 (31.8)	5 (22.7)	8 (36.4)	22
Decrease/ Same	10 (32.3)	3 (9.7)	13 (41.9)	5 (16.1)	31

Chi-squared = 9.9395 3 Degrees of freedom Significant at 0.01.

(Numbers in brackets are percentages of row totals)

other end of the scale, among the 14 large units with more than Rs 500,000 investment, 12 (86%) have increased the size of their labour force (Table 9.7). Interestingly, none of these now large units use the small-scale sector as their principal outlet. Rather growth appears to be associated primarily with serving the mixed category and the factory sector. While the frequencies in Table 9.7 are too small to draw any statistically significant conclusions, the evidence conveys the impression that the type of market linkage does have a real effect on growth prospects.

Particularly interesting is the finding that a high proportion of units with links to the factory sector have grown. This contradicts, or at least gives no support to the prevailing view that relationships between small and large parent units are necessarily exploitative and result in the marginalisation of small manufacturers. As far as light engineering units in

TABLE 9.7
Changes in workforce by main customer among large units

Change in workforce:	Units with investment of > Rs 500,000 Main customer: Small units	Factory units	Traders/open	Other
Increase	0	4 (80)	2 (66.7)	6 (100)
Decrease/same	0	1 (20)	1 (33.3)	0

Coimbatore are concerned that notion seems to have little validity. Three quarters of the units with links to the factory sector have expanded, and this includes all the units that were designated in a previous chapter as 'subcontractors'. By contrast units supplying other small units appear to have a poorer growth record. Some corroboration for this finding is provided by Ghosh and Bharadwaj, who write, in the context of rural employment generation in India, that

> "Small industrial units (in the unorganised sector) attached to large units (in the organised sector) have been relatively more successful than independent small enterprises" (Ghosh and Bharadwaj 1992: 161).

The reasons for this difference in performance may lie in the size and stability of demand, and the superior marketing network of large units. With their established marketing network and established brand names, large units might be able to provide more sustained demand, and thereby create more favourable and secure market conditions, enhancing the viability of small subcontractors and suppliers, and increasing the likelihood of growth. Dependence on traders and the open market also seem to be associated with poor growth prospects; in the case of open market sales, unstable demand may be an important limit over growth. In the case of traders, there may be a parallel between their role vis-à-vis small manufacturers, and the role of traders in relation to agricultural producers. Barbara Harriss for example has pointed to the way that agricultural traders siphon resources away from agricultural producers, making it difficult, but not impossible, for producers to improve techniques of production (Harriss 1990: 98). In similar fashion, small scale manufacturers dependent on traders as a means of disposing of their production may also find themselves at a disadvantage, because of the discounts that traders usually demand. And tiny units may be particularly disadvantaged by this practice; they need to maintain their cash flow, and may have few opportunities to seek out alternative outlets for their wares.

That links with large units may provide a sounder foundation for the growth of small units is also suggested by Table 9.8. This shows the relationship between

TABLE 9.8
Change in investment by type of main customer

	Main customer:				
Change in investment:	Small units	Factory units	Traders/ open market	Other	N
Increase	4(21.1)	11 (52.4)	8 (32.0)	11 (42.3)	34
No change	15 (78.9)	10 (47.6)	17 (68.0)	15 (57.7)	57
Total	19	21	25	26	91

(Numbers in brackets are percentages of column totals)

change in investment in plant and machinery and type of customer. Slightly more than half the units whose main customers are in the factory sector have increased their investment in machinery, compared with less than half in the 'other' category, a third of units supplying traders and/or the open market, and only a fifth of units whose main customers comprise other small manufacturers. Statistically, however, the relationship is not significant; with three degrees of freedom, the chi-squared value is 4.7625. It nevertheless is remarkable that on both dimensions of change, those units supplying the factory sector have a better record of growth, both of employment and of investment, while those supplying traders and/or the open market, and small units, have a much poorer record of growth.

A different line of enquiry is suggested by looking at the educational background of owners of small units. Table 9.9 shows the changes in size of workforce by level of educational attainment of owners. The table indicates a striking contrast between units whose owner(s) have completed secondary or higher levels of education, and those who have not. Three quarters of units where the owner(s) have a degree have taken on more labour at some time, compared with almost two-thirds of units where the owner has completed secondary school, but slightly

less than a quarter of units where the owner has no secondary or higher education. Moreover a quarter of units where the owner lacks secondary education have reduced the size of the labour force, compared with only two percent of units whose head has a degree, and five percent of units where the proprietor has a

TABLE 9.9
Change in workforce and educational attainment of owner

Change in workforce	Number of units whose owner(s) have: Secondary school certificate	ITI cert.	Degree /diploma	Other
Increase	13 (61.9)	3 (42.9)	34 (75.6)	4 (22.2)
Decrease	1 (4.8)	0	1 (2.2)	4 (22.2)
No change	7 (33.3)	4 (57.1)	10 (22.2)	10 (55.5)
Total	21	7	45	18

(Numbers in brackets are percentages of column totals)

secondary school leaving certificate. To test the relationship statistically it is necessary to amalgamate the first two columns - SSLC and ITI certificate - and to amalgamate rows two and three to minimise the number of cells with frequencies of less than five. A chi-squared test for the adjusted categories yields a value of 15.2385, with two degrees of freedom, which is highly significant at the 0.005 level.

Table 9.10 shows owners' education and changes in the stock of machinery. On the face of it, a similar pattern is evident as in the case of changes in the number of workers - a higher proportion of units whose owners have completed secondary or higher education have increased their stock of machinery, compared with the group of units whose owners have not. Statistically, however, educational attainment of owners seems not to be related to changes in investment. The chi-squared value for the data in Table 9.10 is 0.8846, and with two degrees of freedom; this is not significant.

TABLE 9.10
Change in investment and educational attainment of owner

Change in stock of powered machinery	Number of units whose owners have: SSLC/ITI	Degree/diploma	Other
Increase	11 (39.3)	18 (40.0)	5 (27.8)
No change	17 (60.7)	27 (60.0)	13 (72.2)
Total	28	45	18

(Numbers in brackets are percentages of column totals)

The finding that educational attainment and changes in employment levels are related leads us to speculate about possible connections. Are we to understand that education encourages greater ambition and a determination to grow? Or is 'education' a proxy for some other factor or complex of factors?

One possibility is that underlying these relationships is the pervasive influence of caste. In the world of industry and commerce caste may exercise considerable influence. Those drawn from the more affluent castes are more likely to be part of a network of kin and friends which provides readier access to capital as well as to business expertise and contacts. In these ways, as John Harriss amongst others has observed, caste may be a crucial factor "influencing both the possibilities of survival, and even more, the possibilities of expanded reproduction" (Harriss 1982: 950). Table 9.11 provides data on changes in the size of the workforce by

TABLE 9.11
Change in employment and caste

Change in size of workforce:	Caste of owner: Naidu	Gounder	Other
Increase	14 (63.6)	15 (62.5)	11 (45.8)
Decrease	1 (4.5)	1 (4.2)	2 (8.3)
No change	7 (31.8)	8 (33.3)	11 (45.8)
Total	22	24	24

caste of owner. It reveals that two-thirds of the units owned by a member of the Naidu and Gounder communities, have increased in size, compared with rather less than half the units belonging to other caste groups. Statistically, the relationship with caste is not significant. Collapsing the workforce change dimension into two categories, the resultant chi-squared value is 1.9135, which with two degrees of freedom, is not significant.

This examination of growth in the labour force and expansion of investment in plant and machinery reveals that no statistically significant relationships can be shown for change in investment, but change in size of workforce is significantly related to two factors - education of owner, and type of main customer. While it is possible to rationalise each of these relationships individually, it is worth asking whether these two factors exert an independent influence over growth, or whether there is some other, underlying connection between them. A crosstabulation of these two variables yields some interesting results (Table 9.12). For owners with

TABLE 9.12
Owner's education and main customer

Main customer:	Owner's education: SSLC/ITI	Degree/diploma	Other	N
Small units	5 (17.9)	7 (15.6)	7 (38.9)	19
Large units	5 (17.9)	12 (26.7)	4 (22.2)	21
Traders and/or open market	11(39.3)	10 (22.2)	4 (22.2)	25
Other	7 (25.0)	16 (35.6)	3 (16.7)	26
Total	28	45	18	91

(Numbers in brackets are percentages of column totals)

a degree, the two main customers are the 'other' category, characterised by some combination of large/small units and traders; and factory units. Of those with a

secondary school leaving certificate or ITI certificate, the main outlet is the category of 'traders and/or the open market'. Among those who do not fall into either of those categories, the main outlet is other small units. Looked at in the other dimension, of the units which supply large factories, 57% (12 out of 21) of their owners have a degree. Of the units supplying traders and/or the open market, the single largest category (44%) consists of those with the SSLC/ITI, while the major supplier in the 'other category' again consists of those with a degree. Among those with no formal educational qualifications, the single largest group (37%) supply other small units. While the pattern is not absolutely clear, there does seem to be some selection or market segmentation according to educational background. Graduates seem more likely to supply large units, those with SSLC/ITI to supply traders, while the non-qualified group seem to be most closely linked to supplying other small units.

There is a plausible explanation for such a pattern of segmented markets. One of the main complaints levelled against small units is their inability to maintain consistent quality control standards. The issuing of job work is one way of trying to ensure quality; another may be to select those small units whose owners possess technical qualifications in the belief that they not only possess the necessary technical skills, but are also more likely to understand the need for consistency in quality. At the other extreme, those owners without educational qualifications are less likely to be acceptable as subcontractors or suppliers to large units, and may find themselves relegated to supplying other, less discriminating and less demanding customers.

It is then feasible that small units occupy discrete positions in the marketplace, by virtue of the varying technical qualifications of their owners. The more technically educated are better placed to secure orders from large units, and they in turn benefit from a relatively assured market. The unqualified resort to supplying other

small units, and in the absence of an assured regular demand, the prospects for growth are that much reduced. Unfortunately, this interpretation is not entirely supported by the available data. While there seems to be a relationship between level of education and main customer in Table 9.12, the relationship is not statistically significant. The value of chi-squared is 7.9576, with six degrees of freedom, which is not significant. These calculations are likely to be affected, however, by the low frequencies in the "other" category, so we might conclude that the evidence does not disprove the interpretation offered above.

Changes in Activity and Designs

So far we have examined the quantitative dimensions of change. Slightly more than half of the units in the sample have taken on more labour, but only a third have expanded their stock of plant and machinery. It does not of course follow, that those units which have not increased their workforce or expanded the level of investment have necessarily stagnated. Other forms of 'change' may occur, without requiring more labour or more machinery. Included here are changes in the type of activity that units specialise in, and changes in the type of designs which they use. Such changes may be indicative of the adaptability and flexibility of small units while at the same time enhancing their viability.

Changes in what a unit produces may arise because of competitive pressures, reducing the profitability of some lines of manufacture, encouraging units to shift into newer and more profitable activities, but they can also come about as proprietors respond to changing market demands. Changing the design of a product or component is an attempt to improve and broaden its potential market. In this section we examine these forms of adaptability.

For the whole sample, 31% of units have changed their main product since setting up the unit. Sixty units, or two-thirds of the total continue to produce the same commodity or engineering service as when they were established. An example of such changes was given earlier - a unit which originally produced perforated metal sheets moved into the production of washing machines. Other examples include SISM Ltd, originally established to make textile spares, and now specialising in making springs mostly but not exclusively for use in the textile industry. Several units which initially produced motors have since moved into making wet grinders. The production of washing machines and wet grinders seems to be a good example of responsiveness to the emergence of new markets for engineered products. Both types of product are aimed at the relatively affluent middle class in Southern India. Producers of finished goods are no more likely to have changed their line of activity than producers of intermediate goods - 38% of the former now produce something different, but 32% of intermediate goods producers have also switched. Nor is there any relationship with age of unit. Surprisingly enough, a third of units in existence for less than three years have changed their main activity, the same proportion as among longer established units.

It seems plausible that one factor which may differentiate between units which have changed their line of activity, and those that have not is owners' education. It might be expected that the more educated owners may have greater awareness of new opportunities and new market trends. 40% of units whose owners possess a

TABLE 9.13
Change in activity by size of unit

	Number of units with fixed investment in machinery (Rs):		
Activity:	< 200,000	200 - 500,000	> 500,000
Change in activity	14 (26.4)	8 (33.3)	9 (64.3)
No change	39 (73.6)	16 (66.7)	5 ((35.7)
Total	53	24	14

degree have switched their line of activity compared with 30% of non-graduates. Statistically, however, the relationship between education and change is not significant. There is a significant relationship by size of unit (Table 9.13). Only a quarter or so of tiny units have changed production, compared with a third of small units and two thirds of large units. Statistically the relationship is significant - chi-squared is 7.0792, with two degrees of freedom, which is significant at 0.05. In trying to explain this relationship, it might be argued that units which are now large have been able to grow by switching from presumably less to more profitable activities. Growth might then be considered, at least in part, a function of the ability to exploit new opportunities in the marketplace. This was indeed the case for the unit which switched from sheet metal working to the manufacture of washing machines. In other instances, however, the relationship is quite different. Larger units may have better access to resources, skills and information enabling them to switch more easily from one activity to another. A case in point is a relatively large unit making motors which gradually shifted over to making compressors. The relationship between size and activity change is not therefore simple and straightforward. In some instances changing the line of business seems to have contributed to subsequent growth, but in other cases the past record of growth seems to have made change easier.

Changes in the design of both finished and intermediate products may be a further way of improving a unit's commercial success by enhancing the marketability of its output. Overall, 51% of units use their own designs, 40% produce according to customers' specifications, while only 9% use standard designs. There are significant differences between producers of intermediate and producers of finished goods (Table 9.14). Surprisingly, 76% of finished goods producers use

TABLE 9.14
Source of designs by type of specialisation

Source of designs:	Type of specialisation: Finished products	Intermediate goods	N
Own	26 (76.5)	20 (35.1)	46
Others	5 (14.7)	31 (54.4)	36
Standard	3 (8.8)	6 (10.5)	9
Total	34	57	91

their own, rather than standard designs. For some goods national standards do not yet exist, but even where they do, as with pumpsets, relatively few small producers observe the specifications laid down by the Bureau of Indian Standards[1]. Among intermediate goods producers, the designs used are either those supplied by customers, or, to a lesser extent, the proprietors' own. Superimposed on these variations between types of specialisation, there are also differences by

TABLE 9.15
Source of designs by size of unit

	Number of units with fixed investment (Rs):		
Source of designs:	<200,000	200 - 500,000	>500000
Own	26 (49.1)	14 (58.3)	6 (42.9)
Customer	24 (45.3)	7 (29.2)	5 (35.7)
Standard	3 (5.7)	3 (12.5)	3 (21.4)
Total	53	24	14

size of unit (Table 9.15). 95% of tiny units rely on their own or customers designs; very few make use of standard designs, a consequence of the type of specialised machining work undertaken on order to other units. Only a third of

[1] The question of quality and testing is pursued later.

tiny units produce finished goods, and very few of them appear to utilise standard designs. Use of standard designs is more common among small and especially large units in the sample. Use of own designs seems to vary only marginally across size categories, while use of customers' designs tends to decline with increasing size of unit. Statistically, the relationship between size and source of designs is not significant. For the data in Table 9.15, the chi-squared value is 4.6300, and with four degrees of freedom is not significant. That result is, however, likely to be distorted by the number of cells with low frequencies.

For the sample as a whole, 59 units (65%) reported that they had at some time changed the designs they used, while 35% reported no change. Invariably, such changes were intended to be an improvement, to make the product more marketable. Overwhelmingly, such changes were one-off rather than part of a continuous process. In a minority of cases, units had changed their designs several times, mainly because the initial change had not turned out to be an improvement, requiring further changes. A much higher proportion of tiny units (64%) had altered their designs, compared with 43% of the large units. To some extent this reflects differences in the use of standard designs. A higher proportion of large units make use of standard designs, and thus may not feel the same need to introduce alterations to make their goods marketable. More important however, is the fact that tiny units encompass a number of machining shops undertaking specialised work for a variety of different customers. For such units, there may not be a set and predictable design to follow; each job may involve its own particular set of specifications and designs. For such units, designs are constantly changing. Machining units therefore seem to be in a different category from other units making either standard components such as gears or motors, and those producing finished goods. In the latter cases, design changes are likely to be much less frequent, and undertaken not as a matter of course, but exceptionally and for reasons of improved sales.

If we exclude the 21 specialised machining, metal-working units from the sample, and only consider those units making components and finished products, we find that 45 units (64%) have changed their designs at some time, while 25 (36%) have not. Among this subsample of 70 units, there are no discernible statistically significant relationships with any other characteristics of the units. Three-quarters of the units producing finished goods have altered their designs, compared with just over half of those producing components, but the difference is not statistically significant. Similarly, owners' education has no effect on design change. While 69% of graduate owners have altered their designs and 67% of those with SSLC/ITI certificate, only 46% of those with other educational qualifications have done so, but the differences could have occurred by chance. None of the measures of size shows any relationship, nor does age of unit. Units which are less than three years old are no less likely to have changed their designs than those which are longer established.

That design change appears to be random is in itself remarkable. A plausible explanation for this is that, in the absence of standardised designs, small units seek to gain a competitive advantage by introducing design changes. Such changes, as respondents indicated, may not always be for the better, but where a change gives a unit an advantage in securing sales, it may well be mimicked by competitors. This process is made all the more possible within an agglomeration such as Ganapathi, where there are plentiful opportunities for small owners to interact with each other, to swop news and gossip, and to keep an eye on what rivals are up to. There is a comparison to be drawn with some of the Italian industrial districts in this regard. Brusco, for example, points to the "continual informal interaction in cafes and bars and in the street. In this way, new ideas are formed and transmitted" (Brusco 1990:16). Ganapathi may lack the bars, but there is a vibrant street life and a great deal of informal interaction. Such interaction has not

led to a process of endogenous technological development, nor indeed to the kind of sharing of work and machinery among firms in the event of large orders, or machinery breakdown. In the literature on industrial districts, such co-operative behaviour is cited as an example of the development of relations of trust between entrepreneurs. In Coimbatore, such informal co-operation seems to be lacking, so that if machines break down, orders are quite simply delayed. Considerable ingenuity is evident in keeping in operation machinery that is often old and well past its prime but there is no evidence that small units have developed their own technologies, nor significantly adapted existing machinery. Interaction has not set in train a process of continuous technological innovation, but rather seems to encourage relatively simple design alterations on a fairly wide scale. That such redesigns may be important to the survival of small units, although this is not supported by the available survey data. Table 9.16 refers to the relationship between design change and change in the size of the workforce for the sub-sample of 70 non-machining units. It shows that two thirds of the units which have engaged in some form of redesigning have also increased the size of their workforces, while only a third of those which have not altered their designs have taken on more labour. However, the table also shows that among firms that had shed labour, the same proportion had introduced design changes, while half of

TABLE 9.16
Change in design and change in workforce

Changes in workforce:	Changes in designs: Yes	No	N
Increase	30 (68.2)	14 (31.8)	44
Decrease	4 (66.7)	2 (33.3)	6
No change	11 (55.0)	9 (45.0)	20
Total	45	25	70

(Figures in brackets are percentages of row totals)

those those showing no change in employment levels had introduced design changes, the remainder having not done so. The data do not bear out a relationship between design change and change in the labour force. We might nevertheless be justified in maintaining that design changes increase the likelihood of survival, even while they are insufficient as the basis for growth and accumulation.

To summarise, there is evidence of change among the sample units. Rather more than half have expanded their workforce, but only a third reveal any sign of accumulation in the form of additions to their stock of machinery. Two thirds of units have changed the designs used for making components and finished goods, and a third of the units have changed their line of business since the time when they were first established. These various changes need to be seen in the context of the fierce competition that exists within a relatively large agglomeration of small, medium as well as large units. There is no hard information about the number of small units that have succumbed to competition, but among this sample of 'survivors', there is evidence of adaptability and flexibility. Widespread redesigning of products, shifting from less to more profitable activities as the opportunity arises are both forms of response to competitive pressures. Such forms of adaptation may help individual units to survive, but they do not necessarily lead to growth. Among the units that have grown in terms of the number of workers employed, two factors appear significant. One is the owner's educational level, and the second is market linkage. While the relationship between educational level, main customer and workforce change is weak statistically, it seems plausible to suggest that a process of market selection by educational background does occur. Large units may place greater faith in the abilities and competence of 'technocrats' to act as suppliers, benefiting them through regular orders; the least well qualified proprietors tend to be more dependent on supplying other small units, where low volume and irregular demand

are less conducive to expansion. A third of the units, irrespective of age, have increased their stock of machinery, and there are no obvious statistically significant relationships with other features of the sample. Providing an explanation of why some units have been able to increase their level of investment in machinery and others have not proves much more difficult. While we should avoid assuming that accumulation and growth are the prime objectives of all proprietors of small scale industries, there is a striking contrast between the relatively small proportion of units which have increased their stock of machinery compared with the proportion of units increasing the size of their labour force. A plausible explanation for this is that hiring more labour is a cheaper option than investing in fixed assets. Before jumping to such a conclusion, we ought to consider the range of problems that confront small enterprises. It is to these problems, and efforts to overcome them that we now turn.

CHAPTER 10 THE SUPPORT SYSTEM FOR SMALL MANUFACTURING

Explanations of why some small units grow while others fail or stagnate can look either to the characteristics and motivations of individual entrepreneurs, or to the external environment in which firms operate. These are not mutually exclusive frameworks, and in this chapter we concentrate on the extent to which small firms are able to take advantage of external support and assistance. Such support systems may be vital for small firms, which as pointed out in chapter 2, lack the resources, expertise and time to search out technical, and market information, and whose needs for capital can be neglected by the financial institutions. In India both the Central and State governments have developed an elaborate system of assistance to address these perceived disadvantages of the small manufacturing sector. The issue raised here is whether state support does meet the needs of small manufacturers, and their perception and evaluation of such assistance. Here it needs to be borne in mind that state assistance should not be considered as an aim in itself; there is the risk that in limiting the aim of policy to providing support for small firms, the state simply creates a sector of dependent units. The discussion in Chapter Two stressed that public policy can contribute to the development of a dynamic small scale sector where, through its activities, it is able to contribute to the development of greater collaboration and cooperation among small firms by acting as a social catalyst. In this respect, we also need to consider the extent to which small manufacturers have developed their own forms of self-help through the development of credit unions, joint marketing arrangements and trade and industry associations. Small industry associations do exist in India, and especially in urban areas, where there are concentrations of small industries; indeed clustering may be seen as the essential pre-requisite for their development. Their existence raises the question of whether they supplement, or compliment state assistance; or whether they are they a substitute for it? Are they simply political

pressure groups, or are they evidence of the ability of small manufacturers to operate in a collective manner?

The problems of small engineering units

Some idea of the problems confronting small engineering units can be gleaned from Table 10.1, which shows responses to an open question about "the main problem confronting your unit". These responses are disaggregated by size of unit.

TABLE 10.1
Main problem by size of unit

	Units with fixed investment of:			
	< 200,000 Rs	200 - 500,000 Rs	> 500,000Rs	N
Main Problem:				
Capital	19 (35.8)	4 (16.7)	2 (14.3)	25
Power	14 (26.4)	6 (25.0)	4 (28.6)	24
Skilled labour	10 (18.9)	6 (25.0)	4 (28.6)	20
Marketing	9 (17.0)	5 (20.8)	1 (7.1)	15
Late payment	1 (1.9)	1 (4.2)	2 (14.3)	4
Raw materials	0	2 (8.3)	1 (7.1)	3
Total	53	24	14	91

Twenty five units (27.5 %) identified their main problem as inadequate access to capital. The second most widely reported problem is that of power - the complaints referring to occasional blackouts, frequent voltage reductions, and high and rising tariffs for electricity, all of which are seen as disrupting production, and in the case of tariffs jeopardising the ability of small units to export to neighbouring states. The third most widely perceived problem is the supply of skilled labour. Many small units reported a shortage of skilled workers, and consequently the high cost of employing them. Marketing was the main problem for a further group of units. Irregular demand, too much competition, the difficulty of finding new customers were all aspects of the marketing problem.

Two further problems mentioned by a minority of units concerned raw materials, and delayed payment by customers creating cash flow difficulties[1] .

The problems identified here can be compared with those identified by the NCAER study of small units. The latter used a structured question, rather than an open one, asking proprietors whether a particular issue was a problem or not. The results showed that access to capital ranked first, followed by infrastructural problems, raw material supply ranked third, with marketing and labour supply ranking fourth and fifth (NCAER/FNS, 1993: Chapter IV). While there is some overlap in the types of problems identified, there are important differences, notably that the kind of infrastructural problems mentioned in the NCAER concerned shortage of space, water supply and waste disposal, probably reflecting their inclusion of the paint and varnish, and detergent industries. Among the Coimbatore sample, while workshops are often cramped, the main infrastructural problem is that of power, barely mentioned in the NCAER study. It seems that power is a more pressing local issue within Tamil Nadu, as mentioned earlier. We shall briefly and selectively review some of these difficulties, as a prelude to considering the institutional support available to small manufacturers in Coimbatore.

Finance

A shortage of finance is a major problem for small units. This was the most widely mentioned "main problem" among the sample units. When asked about 'other problems' a further 43% of units mentioned finance. The problem is one of inadequate working capital with which to purchase raw materials, pay wages and other overheads; and the difficulty of securing capital for expansion. While affecting most units, finance seems to be a particularly severe problem among tiny

[1] Legislation introduced in April 1993 sought to overcome this problem by making buyers liable to pay interest on late payment for deliveries.

units. As Table 10.2 above shows, twice as many small units refer to it as their main problem compared with the two larger size categories. Intense competition means that tiny and small units are unable to generate surpluses to cushion them against irregular demand, and to finance growth. External sources of financial assistance seem inadequate to help overcome these difficulties. In the sample as a whole, 56 units had succeeded in borrowing money from one source or another. The most widely used source of external funds are the commercial banks, followed by informal lending from friends and relatives. State financial institutions, which

TABLE 10.2
Sources of external financing

Units borrowing from:	Number	%
Commercial bank	36	39.6
Friends and relatives	25	27.5
Moneylender	6	6.6
State government	2	2.2

are supposed to be a major source of capital for expansion, do not appear to make much contribution on the evidence of this sample (Table 10.2). Analysis of borrowers suggests that tiny units are at a considerable disadvantage. It is the larger units that make most use of banks, and they also make most use of the informal method of borrowing from friends and relatives. By comparison, only a quarter of tiny units have succeeded in securing a bank loan, and less than a fifth have been able to tap the resources of friends and relatives (Table 10.3). Statistically, the relationship between size of unit, and borrowing from a bank, and from friends and relatives is statistically highly significant. For bank borrowing, the chi-squared value is 13.0967, with 2 degrees of freedom, which is significant at 0.005; for borrowing from friends and relatives the chi-squared value is 9.5269, and with two degrees of freedom, this is significant at 0.01.

TABLE 10.3
Sources of borrowing by size of unit

	Number of units by level of investment:		
	<200,000 Rs	200 - 500,000	>500,001
Borrowing from a bank			
Yes	13 (24.5)	13 (54.2)	10 (71.4)
No	40 (75.5)	11 (45.8)	4 (28.6)
Borrowing from friends/relatives			
Yes	9 (17.0)	8 (33.3)	8 (57.1)
No	44 (83.0)	16 (66.7)	6 (42.9)
Borrowing from a moneylender			
Yes	2 (3.8)	2 (8.3)	2 (14.3)
No	51 (96.2)	22 (91.7)	12 (85.7)

That tiny units have greater difficulty in securing bank loans is not surprising, and arises for two reasons. First, under the Priority Lending Scheme, the banks are required to reserve a proportion of their lending to certain categories of borrowers including small scale industry. The easiest and perhaps the least risky way of meeting that (generally unwanted) social obligation is to lend relatively large sums to relatively few larger units. In doing so, the banks reduce the risks of default and minimise the administrative costs of lending relatively small amounts to large numbers of borrowers. Secondly, tiny units also fare badly because of the bureaucratic obstacles to applying for a bank loan. The application form currently being used in Coimbatore comprises twenty pages of detailed questions on past performance, and future prospects. Few owners of tiny units maintain any kind of written records, and fewer still have much experience of producing a business plan. The whole system of bank lending is discriminatory, and that discrimination works to the disadvantage of tiny units.

A further important factor which appears to have some influence over external funding is caste. Table 10.4 shows the relationship between borrowing and caste of owner, for a subsample of 70 units. The data suggest that the two economically dominant castes, the Naidu and Gounders, find it easier, presumably because of better family and community connections, to negotiate bank loans than the castes in the 'other' category. Surprisingly, on the other hand, the Naidu make much less of family borrowing than the Gounder, or indeed the 'other' category. Statistically, the relationships in Table 10.4 are not strong - for bank borrowing, the chi-squared value is 2.4257 with two degrees of freedom, while for family borrowing the chi-squared is 3.0267, neither of which is significant. Nevertheless, the data in

TABLE 10.4
Sources of external finance and caste background

	Caste:		
	Naidu	Gounder	Other
Borrowing from bank			
Yes	9 (40.9)	11 (45.8)	6(25.0)
No	13 (59.1)	13 (54.2)	18 (75.0)
Borrowing from friends/relatives			
Yes	4 (18.2)	10 (41.7)	7 (29.2)
No	18 (81.8)	14 (58.3)	17 (70.8)

Table 10.4 are suggestive of the role of caste and family connection in influencing access to finance, and hence a unit's ability both to survive and to grow.

Marketing

Fifteen units reported that marketing was their main problem, but as with finance, when asked about 'other problems', a sizeable number of units indicate difficulty in securing regularity of sales. "Irregular demand", "too much competition", "getting regular sales" are among the kind of comments made by many of the tiny and

small units. Large units on the other hand are less likely to mention such problems. Large units seems to have more stable marketing linkages, but this does expose them to another problem, that of delays in payment for goods supplied. That marketing is a major problem among small firms is borne out by a number of studies. The Second All India Census of Small Scale Industrial Units contains an analysis of the reasons for the closure of small industries, showing that the principal reason for failure is "financial problems", followed secondly by "marketing problems" (GOI, Report on the Second Census of Small Scale Industrial Units, 1992: Table 16.2). In reality, it is of course difficult to disentangle 'financial' and 'marketing' problems; a unit that is faced with declining or erratic sales is also likely to have serious cash flow problems.

Raw materials

Past surveys of small industry have tended to identify the shortage of basic raw materials as the major problem facing small manufacturers in India. That position has eased considerably with the general improvement in industrial output over the last decade or so, and that improvement is reflected in the present survey where only three out of ninety one units mentioned 'raw materials' as their major problem. Moreover, it was not a shortage so much as the poor quality of raw materials that was cause for concern. All three units complained of high prices being charged by local traders for low quality inputs. Among some of the large factory managers in Coimbatore, there is a view that the use of inferior raw materials is widespread among small industries, and because of that, and the lack of proper quality control there is some reluctance to make use of small units as subcontractors. Rejection rates of components bought in from small units can be as high as 30%, hence their caution. Poor quality among producers of components and of finished goods also seems to contribute to the sector's marketing problems. Those small units producing reserved items are free from competition with large producers and can, as it were, get away with poor quality production. But as we

have seen, most small units, including those in this sample, do not produce reserved items and in the absence of protection, they face stiff competition in the production of components as well as finished goods such as pumps. While the quality of production among large scale factories may not be particularly high by world standards, because of better quality control, higher quality raw materials and more modern equipment, they do have some advantage over small units where testing of materials, inspection of output, adherence to relevant industrial standards, are far from the norm. Such 'sub-quality manufacturing', to use Nanjundan's phrase makes it difficult for small units to maintain let alone improve sales (Nanjundan 1994: M62).

In summary, there are a number of major difficulties confronting small manufacturers. The problems of identifying market opportunities; of developing, maintaining and extending sales; inadequate access to finance; the difficulty of recruiting and holding on to skilled manual workers, which was referred to earlier, are common among small manufacturers not just in India but in many other parts of the world too. On top of these obstacles, small units in Coimbatore face the added vicissitudes of an uncertain and relatively expensive supply of power.

The question that arises from this brief review is - what, if anything, is being done to overcome these difficulties? What support systems are available to small units, and how effective are they in addressing these problems? What, if anything, are small units doing collectively to resolve their common difficulties?

The State Support System for Small Scale Industry.

The Indian government provides an impressive array of services for small industry, as we saw in an earlier chapter. Both the Centre and the state governments have pursued an active role in protecting and promoting the growth of small industries. The chief protective mechanism is the system of product reservations, under which

the Centre designates items which are reserved exclusively for production by small industry. The promotional measures have grown over the years, and now include both long and short term financial assistance, raw material procurement, testing of materials and products, government purchasing schemes, entrepreneurial development schemes, marketing and technical intelligence, and industrial estates. The United Nations Industrial Development Organisation describes India as having "one of the most comprehensive programmes of SSI support in the world" (UNIDO 1990:120). As the UNIDO report goes on to acknowledge implicitly, there are real questions about whether this support system does address itself to the problems and concerns of small industry, and whether the delivery of services is effective. The same questions arise in relation to non-governmental support systems. Educational and research institutions, Chambers of Commerce and Industry, and 'self help' organisations of small industries are all, at least potentially, able to play a role in the growth and development of small industry by providing technical support, marketing intelligence, general management know-how and a supply of appropriately trained labour.

In this section, we examine some of the more important providers of services for small engineering units in Coimbatore, attempting to assess their role and their significance for the development of the sector as a whole. Particular attention will be paid to the government-sponsored District Industries Centre; the Coimbatore and District Small Scale Industries Association; and local educational and research institutions, using data collected in the course of interviews with representatives of these organisations in Coimbatore.

The Government Support System for Small Industry

The District Industries Centres were established in India from 1978 onwards, as the local focal point for the delivery of government support services for non-factory industry. The organisation and functions of the DICs are laid down

centrally, and there is little scope for local variations. Each DIC comprises a General Manager assisted by seven deputies, each of whom has specific functional responsibilities. The functions of the DIC are wide ranging and include:

i. the production of economic intelligence reports, which assess existing industries in the District, and attempt to identify potential new areas for development

ii. appraising and advising on proposals for specific industrial projects

iii providing advice on the availability and sources of supply of plant and machinery

iv monitoring the supply of important local raw materials, and arranging for the purchase and distribution of materials in short supply to local industries

v. advising on and sanctioning applications to both commercial banks and State Financial Corporations for loans

vi providing market information to small units, and liaising with government procurement agencies for the marketing of products

vii arranging training programmes for intending and existing entrepreneurs

viii the registration of new units

The scale of the task confronting DICs is quite formidable. The Coimbatore DIC is expected to provide advice and assistance to all registered small industries across the entire District, as well as to khadi and village industries. In practice, with a staff of eight principals, and a limited amount of administrative back-up, the DIC has been set an impossible task, as the Deputy Director, Mr Sivaraman, acknowledged. In common with DICs elsewhere, the two main priorities lie in the registration of new units, and the organisation of Entrepreneurial Development Programmes.

Registration is an important, time consuming and bureaucratic activity, from the point of view both of the DIC and that of small manufacturers. Non-registered

units are not eligible to make use of the services provided by the DIC. In particular, it is virtually impossible to secure loans from banks or from government without the DIC's sanction, so that there is a strong incentive for units to register, but registration is a lengthy and complex process. Depending on the type of industry, it can involve securing clearance from as many as 24 different government departments, including the Municipality, the Town Planning Department, the Pollution Control Board, local Sales Tax Officer, the Superintendent of Central Excise, the Income Tax Officer, the Municipal Fire Officer, the State Electricity Board, the Registrar of Companies etc. etc. One of the aims in setting up DICs was to establish a central single window where all of these formalities could be completed on the spot, with the DIC acting on behalf of other government departments. In practice, this has failed. The DIC vets proposals for setting up new units and provides all the necessary documentation for the clearances that are required for registration, but the unwillingness of other departments to delegate authority to the DICs means that the individual entrepreneur, having received preliminary clearance from the DIC, then has to visit the appropriate offices of the various branches of government involved. Lakhanpal's study of registration in Himachal Pradesh revealed that this whole process took, on average, 167 days (Lakhanpal 1990). From the perspective of the Coimbatore DIC, the system of registration, involving the initial vetting of all proposals, and the provision of guidance as to the necessary clearances required, takes up a large share of the Centre's available resources. Each year, it deals with between 1000 and 1500 applications for registration.

The second priority for the Coimbatore DIC is implementing Entrepreneurial Development Programmes. Introduced in 1990, these programmes form part of a national scheme to encourage 'self-employment' among specific target groups, namely women, scheduled castes and tribes, and the educated unemployed. The Centre runs three courses per year for women, one for SC/ST, and two for

"technocrats" (unemployed graduates and ITI certificate holders). Demand for these courses is high. During 1993, the average number of applicants for each of the technocrat course was 144, and for women's courses it was 178. Each applicant is required to submit a project proposal which is assessed by the Deputy Director for Economic Intelligence, who selects a maximum of 40 candidates per course. Initially, the courses were of two weeks duration, designed to make the candidates aware of the procedures, and the benefits, of setting up a small unit. The success rate was not encouraging, with fewer than 1 in 5 participants entering self-employment. An innovation has been to extend the length of the course to include a six to eight week placement, arranged with the local small industry association, and this, according to the Deputy Director, has pushed the success rate up towards 50%.

Training schemes for prospective entrants, and the registration of new small units are the principal activities undertaken by the staff of the DIC in Coimbatore, taking up a disproportionate amount of the limited time and resources available. The corollary is that relatively little time or resources are available to provide support to existing small units. Extension visits to units in the field seem to have been abandoned. During several hours of interviews with staff at the DIC, no information was volunteered about field visits, yet as an extension service, it is expected that a regular programme of visits will be maintained. The Coimbatore DIC is not unusual in apparently carrying out very little extension work. The NCAER study revealed that less than a fifth of its sample units had received a field visit from any government organisation in the preceding three years; and of those visited only a quarter reported the visit as being useful (NCAER 1993 : 219). Among the light engineering units sampled in Coimbatore, only two out of 91 proprietors was able to recall ever having been visited by a representative of the DIC or other government body concerned with small industry.

There seem to be two basic problems which seriously compromise the effectiveness of the DIC. One problem lies in the way that a small number of activities have come to dominate the work agenda. It needs to be emphasised that the Centre's priorities are not locally determined. DICs are part of a national bureaucratic system which seems to have a preoccupation with increasing the number of start-ups, at the expense of providing the types of positive support needed by established units. Related to this is the second difficulty, that of under-resourcing. With limited staffing and a tightly controlled budget, the resource base for the DIC is slender. It is quite inconceivable that a single individual can be expected to possess anything like a comprehensive knowledge and understanding of the technical requirements of every industry in a District, from agricultural processing to wire drawing, . Yet this is what is expected of the Deputy Director (Machinery and Equipment). The Coimbatore DIC maintains a library which contains a number of technical journals, together with a small number of textbooks of varied vintages. Beyond that, the Deputy Director has few resources to acquire up-to-date technical information or to keep abreast of technological development through training courses. Likewise, there is no data base of marketing information that can be plugged into, nor any independent capacity for searching out marketing intelligence. What marketing information is available is limited to government procurement schemes.

The experience and comments of the proprietors of our sample of light engineering units shed some light on the perceived effectiveness of the DIC. Without exception, all the proprietors were aware of its existence. It occupies a prominent position in the centre of the city, and is highly accessible. Of the 91 units in the sample, only 19 (21%) had had any contact with the DIC other than for the purposes of registration; excluding the 25 non-registered units whose status bars them from taking advantage of government support, 19 out of 66, or 28.8% had either used, or attempted to use, the services provided by the DIC. Of

those 19 units, eight had sought assistance with securing loans, seven had sought technical advice while the remaining four wanted help with new marketing contacts. Tiny units were no more and no less likely to use the DIC than larger units. In fact the proportion of units of units using the DIC was relatively constant across size groups. Educational level of owner does seem to have some bearing on use of the DIC; 43% of owners with a Secondary school leaving certificate or ITI certificate had been in contact with the DIC, compared with 29% of degree holders, but only 9% of those without educational qualifications. Limited usage among the less well educated might reflect apprehension at tangling with the bureaucracy, while limited use by graduates may be a comment on the quality of the service offered.

The perceived value of the DIC in providing support to small industry was not particularly high. Three units deemed contact with the DIC to have been 'very important' for their business; interestingly these were all units which succeeded in securing bank loans. Eight units considered the DIC had been 'important', and a further eight considered it of 'no importance at all'. Included in this last group were all four of the units which had sought help with marketing, and four which had sought technical advice. None of these eight had much to say that was complimentary about the services provided by the DIC. Among 66 units, therefore, only 14 or a fifth of registered units, perceived the DIC to be 'important' or 'very important'.

Much the same picture emerges in relation to other government support agencies. Like the DIC, these other agencies suffer the same shortage of staff and resources. Coimbatore has a small local branch office of the Small Industries Service Institute. Its advisory, counselling and training services for small units duplicate those provided by the DIC, and seem no better in quality. Its most widely used service in Coimbatore is the Regional Testing Laboratory. This facility is available

to all industrial units, regardless of size, to investigate the physical and chemical properties of raw materials, and also to test motors. In practice, large companies in Coimbatore tend to have their own testing facilities but the high cost of acquiring such equipment puts it beyond the reach of small and medium size units. Potentially the Regional Testing Laboratory is an important facility for small units, but relatively few seem to take advantage of it. Only ten units in our sample had ever used any of the services provided by SISI; of those, nine had made use of the testing facilities, and one had sought marketing guidance. Interestingly, it tends to be the larger units in the sample who use SISI facilities. 29% of the units with more than Rs 500,000 invested in machinery had had contacts with SISI, compared with only 7% of tiny units with investment of less than Rs 200,000. This may reflect different perceptions of the need for testing and quality control. Of the 10 units with experience of its facilities, five ranked SISI as providing 'a very important' service and five ranked it as 'important'.

The third important source of government assistance for manufacturers in Coimbatore is the State Small Industries Development Corporation (SIDCO). In addition to providing marketing assistance, SIDCO's main roles are to act on behalf of the State Financial Corporation in providing loans to small units, and to operate a depot in the city through which a variety of raw materials is distributed. In the past when raw material shortages were more acute, this facility was very important. It continues to attract support if only because the quality of supplies tends to be higher and more reliable than is available from private traders. Seventeen units in the sample had dealt with SIDCO, 8 for the purposes of securing financial assistance, and 9 for raw materials. As in the case of SISI, it tends to be the larger units which make greater use of SIDCO. 43% of large units (investment of more than Rs 500,000) had had contacts with SIDCO, compared with only 6% of tiny units with investment of less than Rs 200,000. The owners of five of these 17 units considered that SIDCO was 'very important' to their

business, 11 considered it 'important', and one expressed the view that it was not at all important.

Overall, 21 out of 66 registered units (32%) had made use of the services of one or more of the three government agencies. Six units had made use of all three agencies. While utilisation rates are relatively low, the level of awareness of government services in Coimbatore is high, and reflects the easy diffusion of information between proprietors within an industrial agglomeration. While all the proprietors, including those of unregistered units, knew of the existence of the DIC, SISI and SIDCO, there was a general perception that anything to do with a government agency would inevitably involve filling out long and complex forms, with little prospect of any definite outcome. Of the units which have used the services of these agencies, the greatest satisfaction seems to be in the area of provision of raw materials, and of testing facilities. The area where government agencies seem to have the lowest credibility is the provision of technical and marketing assistance. As we saw earlier, marketing is a particular difficulty for a large number of the sample units, and the apparent inability of government agencies to address this problem does little to inspire confidence in them. We may note finally that there is no relationship between contact with government agencies and growth of individual units. Taking the sub-sample of registered units, there is no statistically significant relationship between either change in size of the workforce, or change in the level of investment, and the use of the services provided by the DIC, SISI or SIDCO.

From the evidence of this survey, it would be difficult to adjudge the government support system as entirely satisfactory. Only a third of units were found to have made use of public agencies but fewer seems to derive any tangible benefit. A large majority had made no use of the services on offer from any of these agencies. There does not appear to be any directly comparable data available from

other surveys. The NCAER survey asked about specific services provided by government agencies, and found that relatively few of the 657 units had availed of them. Only 10% of units, for example had sought technical assistance, and 6% had sought economic intelligence (NCAER, 1993: Table 7.10). And of those units which had made use of government agencies, two-thirds rated them as unsatisfactory (NCAER 1993: 217). The NCAER came to the general conclusion that government institutional support for small industry has become "unwieldy, rigid and inflexible" (NCAER 1993: 250).

The bureaucratic nature of the government support system, together with chronic underfunding helps create a situation in which the technical and professional expertise of these agencies loses credibility. Moreover, the priorities of these agencies, and especially of DICs seems to lie in encouraging new start-ups, rather than addressing themselves to the needs of already established units. The upshot of this is that the agencies are not considered to be 'relevant' to the needs of the generality of small units.

Self Help and the small manufacturing sector

In India, a variety of non-governmental agencies now provides help of some kind to small manufacturing industry. In Coimbatore, there are several such organisations. Some represent specific industrial sectors, such as the South India Steel Furniture Manufacturers Association, the South India Engineering Manufacturers Association, and the Coimbatore Small Foundry Association. The Chamber of Commerce and Industry draws its membership predominantly from among large industrial units in the city, although smaller units are eligible for membership. Indeed, among our sample, 12 units, mostly the larger small units, had had contacts with the Chamber of Commerce. The most active and widely

known organisation working with and for small engineering industry is the Coimbatore and District Small Scale Industries Association (CODISSIA).

CODISSIA was founded in 1969 by a small group of owners of light engineering units. Today, it has a paid-up membership of 3300 units, of whom 95% are located within the city itself. It operates on several different levels. In the first instance it acts as a pressure group, representing the views of its members to other, and especially to government bodies. CODISSIA has regular bi-monthly meetings with the General Manager of the DIC, and with the District Collector to review the progress of small industry, and to urge action in specific areas. A current major issue is electricity supply. Through the District Collector, the local representative of the state government, CODISSIA had been pressing for an improvement in supply. During fieldwork in late 1993, CODISSIA and the Chamber of Commerce and Industry had arranged a joint meeting for their members with the Chairman of the State Electricity Board. It proved an uncomfortable encounter for the Chairman.

A second important function undertaken by CODISSIA is to organise the kind of support services which other organisations are unable or unwilling to provide. A regular programme of courses is provided on a variety of managerial and technical topics, including basic accounting and bookkeeping, computing, and management skills. A more specialised service has been set up under which members of the Association with experience of exporting provide practical help and encouragement to others. A further significant development, proposed and sponsored by CODISSIA in association with the Southern Region of the Engineering Manufacturers' Association, has been the establishment in 1988 of the Small Industries Testing and Research Centre (SITARC), discussed further below.

An equally practical service has been the establishment of a triennial trade fair. The major industrial trade fairs in India are held in Bombay and Delhi, to the disadvantage of Coimbatore's industrialists. Small manufacturers find it both costly as well as inconvenient to absent themselves for several days visiting such gatherings, so the idea of holding a trade fair in Coimbatore itself was well supported. Beginning in 1988, it is now a matter of considerable pride to the Association that it has developed into a major event in South India. It provides an opportunity for Coimbatore manufacturers to exhibit their wares, while at the same time, companies from elsewhere in India can show off their latest machinery and equipment. It functions as both an opportunity to develop market contacts, and a forum for the diffusion of technological information. The 1991 trade fair involved a total of some 300 exhibitors, of which 86 were local. The big names of Indian engineering were represented, as well as two firms from Japan and a German manufacturer. With liberalisation, CODISSIA hopes that in future years, there will be more foreign exhibitors, leading on to growing collaboration between local and foreign investors. Over a nine day period, the 1991 fair attracted some 75,000 visitors from all over Southern India, helping to promote CODISSIA's name, and also providing the organisation with the funds to acquire land and set up a permanent exhibition site with space for 500 exhibitors to be used for the 1994 Industrial Trade Fair.

A third area in which CODISSIA is active is in its programme of liaison with other local institutions. It is through the offices of CODISSIA that the DIC arranges placements for its Entrepreneurship Development Programme. There are strong links with some local educational institutions, as part of which CODISSIA members are encouraged to propose specific technical problems as the basis for student projects.

In sum, CODISSIA is an active organisation on a number of fronts. Among the sample of light engineering units in Ganapathi, thirty five (38.5%) were members of the organisation attracted by its high profile in the city, and the range of real services provided. Twenty of the thirty five ranked CODISSIA as "very important" and fifteen ranked it as "important" to their business. This level of support suggests that CODISSIA has more credibility and is regarded as more effective than the government-run agencies. Some evidence for this can be drawn from our sample; 13 units had made use of the services of both CODISSIA and the DIC. Among this subsample, 7 described CODISSIA as 'very important' and 6 as 'important'. Only three considered the DIC "very useful", five considered it "useful" and five believed it was "not at all useful". The more favourable evaluation of CODISSIA presumably reflects the differences in the organisation of government and self-help agencies. As a grassroots organisation CODISSIA's activities reflect the needs and interests of its members. It is likely therefore to be more responsive to local small industries than bureaucratically organised 'top-down' government agencies. That local government agencies are part of a national bureaucratic structure perhaps goes some way to explaining why CODISSIA's campaigning and lobbying activities have stopped short of campaigning for an improvement in the delivery of government services. The kind and quality of state support available locally is a matter for national, rather than local determination, and in the absence of an effective national campaigning body, local small industry associations have little alternative but to develop as alternative local sources of assistance.

One question that arises from this description of CODISSIA's activities is how representative is it of small industry in general? The President of CODISSIA, Mr Sundaram, acknowledged that the membership of the Association was drawn from among the larger small units. His own unit is registered both as a small scale industry, and under the Factory Act, and he suggested this was typical of the

membership generally. That view is supported by the data collected from small units in Ganapathi (Table 10.5). Just under a quarter of tiny units were members,

TABLE 10.5
Membership of CODISSIA by size of unit

	Investment in plant and machinery (Rs):		
	< 200,000	200 - 500,000	> 500,001
Member of CODISSIA:	12 (22.6)	13 (54.2)	10 (71.4)
Non-member:	41 (77.4)	11 (45.8)	4 (28.6)

rising to over half among small units and three quarters of large units. Statistically, the relationship between size of unit and membership of CODISSIA is highly significant; the chi-squared value for the data in Table 10.5 is 14.53386, with two degrees of freedom. Caste does not seem to be an important consideration in membership of CODISSIA, but owner's education does. Almost half of those owners in the sample with a degree/diploma claimed membership, compared with a third of those with SSLC/ITI certificate, and only a fifth of those without formal educational qualifications.

The profile that emerges of CODISSIA members is that they tend to be better educated 'technocrats', representing the larger end of the spectrum of small manufacturers. Tiny units are by no means discriminated against but there seems to be a process of self-selection in which CODISSIA attracts the more successful and the more ambitious small manufacturers, who recognise its potential utility in furthering their ambitions. While the membership is skewed in favour of the larger more successful enterprises, it can be argued that there is some degree of commonality in the problems facing small industries regardless of size, and to that extent CODISSIA represents not merely the self-interest of an already successful

minority, but does address itself to the problems of small units generally. Thus in campaigning for improvements to the supply of power, CODISSIA is acting on behalf of small industry in general. On the other hand, it is also the case that certain activities are vehicles for the interests of larger units, and this is certainly true of the Industrial Fair. Only the larger and more successful small units are in a position to afford the stall rentals which range from Rs 10,000 up to Rs 37,500. The same comments apply to CODISSIA's encouragement of export activity. There is no inevitable connection between size of unit and exports, but in practice most tiny units are more preoccupied with survival in the domestic market than seeking the key to export success.

In their report on small manufacturing enterprises, the NCAER also considered the role of small scale industry associations. On the basis of data relating to 41 trade and district associations, the NCAER came to the general view that

> "The development work done by them in terms of providing support services seems to be quite limited in spite of their making big claims about it. Most associations may be involved in a large array of services offered, but the services offered in terms of quantity and quality are not adequate" (NCAER 1993: 252).

The report goes on to acknowledge that 'a few industry associations are doing very good work' (NCAER 1993:255). Whether CODISSIA belongs to this category is an unanswerable question in the absence of a more comprehensive and comparative study. Certainly it is an energetic organisation, whose credibility ranks high not least because of the innovatory initiatives it has launched. It remains however, something of an 'élite' rather than a mass organisation.

Education and Training.

Recruiting and retaining experienced and skilled industrial workers is, as noted already, a major headache for many small units. The labour market is highly competitive, and dominated by large factory units. By paying better rates, they are in a position to cream off the better qualified. Small units have little choice but to recruit relatively well-educated personnel and provide on-the-job training, a task which they are neither keen nor particularly well-suited to undertake. At root, the problem lies in the deficiencies of the system of technical education in India.

The link between education and development was explicitly recognised in the Government of India's Science Policy Resolution of 1958, which stated :

> "The wealth and prosperity of a nation depend on the effective utilisation of its human and material resources through industrialisation. The use of human material for industrialisation demands its education in science and training in skills... India's enormous resources of manpower can only become an asset in the modern world when educated and trained" (GOI, Ministry of Education and Culture, quoted in Jha 1985).

While there has been considerable expansion of education at all levels, much remains to be done to achieve the aim of an educated and trained labour force. By 1991, a third of all men, and almost two thirds of women were illiterate (GOI Census of India 1992: Statement 17), while at the other extreme, it is claimed that India has the third largest pool of scientifically trained personnel in the world (Mitra and Sanyal 1989: 2)[2]. These two facts are not unrelated. The enormous expansion of higher education has preempted a growing share of the educational budget at the expense of the aim of achieving universal basic mass literacy; at the same time, graduate unemployment is a growing and acknowledged problem, even while there is a shortage of trained personnel to meet the requirements of the

[2] This achievement is perhaps less remarkable when seen in the context of the sheer magnitude of India's population.

labour market (Balasubramanyam 1984: 29. Chitnis 1993: 404). We shall briefly explore some of these paradoxes in the context of Tamil Nadu, before looking more closely at labour supply in Coimbatore.

In Tamil Nadu, expenditure on primary education has dropped from 60% of the total educational budget in 1955/56 to less than 50% by the late nineteen-eighties, while the share of spending on collegiate education has more than doubled (MIDS 1988: 271). Within higher education, it is in arts and commerce that the greatest expansion has taken place, while technical education has languished. By 1991/2 a quarter of a million students in Tamil Nadu were enrolled in arts and commerce compared with 42000 students in 1956. By comparison, public sector technical education at post-secondary level has expanded at a much slower rate. Enrolment in polytechnics has grown from 820 in 1956 to 58,427 in 1991, while in engineering colleges student numbers have grown from 500 in 1956 to 24,422. That the social return on investment in technical education is considerably greater than investment in arts and commerce is shown by data on graduate unemployment. In 1991, 382,000 of those on the job-seekers register were graduates; 43% of those had a qualification in arts or commerce compared with less than 5% of those qualified in engineering (Government of Tamil Nadu, 1992: Table 8.16). The apparent failure of higher education to adapt to the needs of the economy is due, according to Chitnis, to a combination of political and populist pressures to expand higher education on the one hand, and budgetary limitations on the other. The result is that

> "Universities have been finding it difficult to accommodate the large flow of students that has been pouring in for admissions. Unable to provide them with education in fields like medicine, engineering and others immediately relevant to development, because education in these fields is expensive, they have, in desperation, made room for them in the traditional arts, commerce and science faculties" (Chitnis, 1993: 403).

Other commentators see the bias against technical education as arising from "an élitist dislike of manual work" (MIDS 1988: 273), and aspirations to white collar employment (Adiseshiah, 1978:11). Whatever the reasons, it is not only in higher education that technical education has been accorded a relatively low priority. There has long been criticism of a similar failure at secondary level to ensure a correspondence between what the educational system provides and the opportunities for employment. In Tamil Nadu only a third of the population between the ages of 14 and 17 attends secondary school, and one of the reasons for this - but by no means the only reason - is because secondary education "is not perceived by young people or their parents to be relevant and useful" (MIDS 1988: 273). Specifically the criticism is that secondary education offers insufficient opportunities for technical and vocational training, and achieves little in preparing young people for available work.

These criticisms of the shortcomings of the system prompted the Centre to introduce two new initiatives in the 1970s. The number of Industrial Training Institutes, which provide training in a variety of crafts and trades from plumbing and car maintenance to engineering, was greatly expanded after 1970. In Tamil Nadu, there were 10 such institutes in 1961; by 1973 there were 31 with an intake of 13000, and today there are 44 with 15000 students. Alongside this, efforts have been made to introduce 'vocationalisation' into general secondary education to make it more relevant to the wider world. Tamil Nadu has adopted this approach rather more readily than many other states, but the results are far from encouraging. Of the 5000 secondary schools in Tamil Nadu, less than a fifth have adopted 'vocationalisation'; moreover, more than 50% of the students involved are pursuing courses in business and commerce, and less than 20% in engineering and technology, according to the Directorate of School Education.

These initiatives have failed to rectify the mismatch between education and employment, with the result that

> ".. even under severe conditions of unemployment, many vacancies notified by employers remain unfilled and are eventually cancelled due to the non-availability of suitable candidates. .... Maximum skill shortages are noted in the technical and professional occupations at the higher level and in the occupational category of craftsmen and production workers at the lower level" (Raza 1990 :135).

Generally technical education has been accorded a relatively low priority both in India and in Tamil Nadu[3]. Not only does the formal education system have a poor record of producing sufficient numbers of technically qualified personnel and especially of trained manual workers, the qualitative deficiencies of the public education system have been widely remarked on. Virtually all spending in the public sector is earmarked for wages and salaries, leaving less than 10% for the purchase of necessary teaching materials and the replacement of obsolete equipment, contributing to what Balasubramanyam describes as the "lamentably poor quality of education" in the public sector (Balasubramanyam, 1984: 29). The deficiencies of the technical education system have received official acknowledgement. The Eighth Plan document promises a major thrust in

> "strengthening of vocational education so as to relate it to the emerging needs in the urban and rural settings" (GOI, Planning Commission, 1992: volume 2: 285).

What the Plan does not spell out is how attention to local needs can be accommodated in the highly centralised and bureaucratic public education system. On a more positive note the Eighth Plan refers to the implementation of a Vocational Training Project, supported by the World Bank, for the modernisation and improvement of vocational training institutions, including the Industrial

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[3] It is an interesting comment that no data is available, either for Tamil Nadu or for India generally, on spending on technical education. Alone among Asian countries, the data supplied by the Government of India for the UNESCO Statistical Yearbook does not distinguish technical from higher education.

Training Institutes (GOI, Planning Commission 1992: volume 2 :154), a project originally proposed in the Seventh Plan, but postponed for lack of finance.

In Coimbatore, there is on paper at least, an impressive array of educational institutions which might be considered to be of relevance to the labour needs of the engineering industry. There are

7 Industrial Training Institutes

7 Polytechnics

2 Colleges of technology

3 Universities

Of the three universities - Bharatiyar, Avinashilingam and the Agricultural University - only the latter makes any provision for engineering through its Department of Agricultural Processing. The main local sources of trained technical personnel are the Industrial Training Institutes, the Polytechnics and the Colleges of Technology. The ITIs recruit young men (sic) of 15 plus, and provide them with a basic six months training course as fitters, welders, turners, sheet metal workers, alongside more traditional crafts such as watch and clock repairing. The polytechnics are the main source of students with a diploma in either electrical or mechanical engineering, while the Colleges of Technology produce graduate level engineering and technical personnel. In considering the supply of labour, it is useful to bear in mind the distinction between public and private provision. The State government is responsible for five of the ITIs, two polytechnics and one of the colleges of technology. The remaining institutions are 'autonomous' - i.e. either entirely private, or grant aided by the government. In practice, most of the private institutions, especially the polytechnics, are small and specialise in 'glamorous' areas such as electronics and computer engineering. There is however one major 'autonomous' institution, the PSG Institute. This, together with the government-run establishments, dominates the supply of technical personnel in Coimbatore.

The government-run institutions of education and training in Coimbatore suffer the same kinds of difficulties as public educational institutions elsewhere in India. Their major problem is that of lack of resources. The polytechnics, college of technology and the Industrial Training Institutes are burdened with obsolete equipment, which they are hard pressed simply to maintain. Limited budgets make the acquisition of teaching materials problematical; library facilities are poor, as is the opportunity for students to gain practical hands-on experience in the use of modern machinery. Limited resources are not the only problem. The curricula for state-run institutions are centrally administered and allow of little local flexibility. There is no incentive within such a bureaucratic system to respond to the specific needs of local industry. The government-run ITIs, for example, continue to enrol young men to learn watch and clock repairing irrespective of likely employment opportunities. There seems to be no liaison or consultation between the public education system and local firms. In spite of these defects, the majority of students with some engineering background have no difficulty in securing employment locally. Most of the students from the ITIs are taken on by local large textile and engineering companies as apprentices, who undergo a further two years training, during which they instructed in the use of machinery, and taught engineering drawing and mathematical calculation. Only at the end of a successful apprenticeship are they regarded as skilled workers. That firms regard this extra training as essential is itself a significant comment on the quality of formal public sector training.

The quality of education in the private, or autonomous, sector is very variable, but in Coimbatore, there is an example of high quality technical education. The PSG Charities Trust was established in 1926 after the death of P.S.Govindaswamy Naidu, founder of Coimbatore's pumpset industry. The foundry and factory he started were gifted to the Trust, and form the nucleus of the PSG Industrial Institute. The Institute was set up with two aims - first, to serve as an educational

centre for the training of craftsmen, artisans, mechanics and engineers, and secondly, the Institute operates as a major industrial production centre, the profits from which are devoted to promoting education. Today, PSG Charities Trust, using the profits from the Institute's output of pumpsets and advanced machinery, and with grant aid from the State government, runs a large educational empire in Coimbatore. In addition to basic schools, and a Higher Secondary School, PSG encompasses a College of Arts and Science, an Institute of Medical Science, an Industrial Training Institute, a College of Performing Arts, a Polytechnic and a College of Technology. The College of Technology, with 2200 students at undergraduate and postgraduate levels, and the Polytechnic with 800 students, are larger than their state-run equivalents, but the overriding contrast is in terms of the range and quality of the facilities available to students in the PSG institutions, and the very different underlying ethos.

The laboratories and workshops available to students are well-equipped with up-to-date machinery, which is regularly modernised to ensure that students are familiar with the latest technological developments. In addition to CNC machine tools etc., there is also a specialised machining centre which combines facilities for the design, drafting and manufacture of prototypes and components. An advanced machine tools engineering facility was funded by the UN Development Programme, while a CAD/CAM Centre was set up in 1983 with support from the Ministry of Education.

Not only are the PSG Institutions considerably better endowed than their government counterparts, there is also a much greater emphasis on active involvement with local industry. All students in the ITI, the polytechnic and the college of technology spend a minimum of one session per week working their way through the various production and management departments of the PSG Institute, gaining first hand experience of a commercial industrial enterprise.

Diploma and degree students all undertake a project in their final year and encouragement is given to projects which involve collaboration with local firms. To that end, there is regular contact with both the Chamber of Commerce and Industry and CODISSIA, whose members are encouraged to suggest suitable student projects. Beyond that, the facilities of the institutions are available in other ways to help and support local industry. The CAD/CAM centre for example, mounts short courses for people working in local industry as a means of promoting the wider use of modern engineering methods, while the Product Development Centre is active in helping local firms to redesign products and components. Such local involvement is noticeably absent in government-run establishments.

Both the public and the autonomous institutions are important training providers, but they are not exclusively geared to providing labour for local consumption. The polytechnics and colleges of technology recruit from the whole of Tamil Nadu and only a small proportion - an estimated 15 -20% - find work locally on graduation. In our sample of light engineering units, we found that 58 owners/partners, almost half the total sample, had a degree or diploma, generally in engineering or science. Given that 73% of these were born in Coimbatore, and a further 20% in the rest of the state, it seems a reasonable assumption that most would have received their education within Coimbatore itself. On this evidence, the colleges are an important source of local entrepreneurship.

The educational system seems to be much less successful in providing local industry with trained manual workers. Table 10.6 shows the educational background of those working in the sample units in Coimbatore. The Industrial

TABLE 10.6
Educational attainment of workers in sample units

Workers with:	Number of workers	% of total
Secondary School certificate	195	23.9
Industrial Training Institute cert.	122	14.9
Degree/diploma	42	5.1
None of the above	458	56.1
TOTAL	817	100

Training Institutes in Coimbatore appear to have a better record of supplying labour to small industry than is the case in India generally. The Second Census of Small Scale Manufacturing Industry revealed that only 1.1% of all workers possessed an ITI certificate, rising to 2.6% in the engineering sector, suggesting that the ITIs had not lived up to their aims of becoming a major source of trade and craft workers (GOI Second Census of Small Scale Industrial Units, 1993: Table T-53). The secondary schools are another important source of supply but with only just over a third of the relevant age group attending secondary school in 1981, neither ITIs nor secondary schools are able to satisfy the demand for labour. Most small units prefer to recruit the better-educated in the belief that they are easier to train and quicker at picking up skills, but because of the general shortage of trained/well educated personnel, small units also have to recruit less well-educated workers. The lack of outside assistance - in the form of day release, for example - places a heavy burden of training on small firms with no guarantee that in a highly competitive labour market, such training as is provided will be rewarded. The prospect of poaching, and the lack of training expertise among small manufacturers are strong incentives to provide minimal on-the-job training.

We conclude from this consideration of the training system in Coimbatore, that much is being done, especially in the PSG Institute to supply technical personnel, but the emphasis is weighted towards producing technicians at the graduate and

diploma level. A much lower priority seems to be accorded to producing the skilled manual/craft workers which the engineering industry, both large and small, requires. In this respect, Coimbatore is a mirror of the priorities of the formal education system in India generally.

Technology transfer, testing and product development

The small scale sector in India has a reputation for poor quality output and, among large firms, for chronic inability to meet quality control standards for components.[4] The shortage of well-trained skilled workers, the reliance on obsolete equipment, the inability to afford testing equipment for raw materials or for products - all contribute to the low and variable quality of production among small units. In this section we will briefly look at the support available to small industry in the areas of technology transfer, product development, and quality control.

The earlier discussion of small industry in Japan pointed to the way that small manufacturing in that country had benefited from the subcontracting system through the transfer of new technologies from large parent organisations. In India, there is little evidence of the operation of similar transactions. In the sample of Coimbatore units, only one out of a total of ten subcontractors to large factory units was able to report having received technical assistance. This particular unit supplied a large engineering firm with machined components, which were monitored for quality. It was the practice for the parent company's engineers to visit their suppliers periodically, especially if the reject rate rose, in which case they offered technical advice and support.

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[4] Large industrialists in Coimbatore report that reject rates of less than 5% are acceptable, but small units have difficulty in meeting that target. In some instances, reject rates of up to 30% have been recorded. Such units invariably find themselves looking for new customers.

Further insight into the relationship between small and large firms is offered by Nadar's study of engineering units in Coimbatore (Nadar, 1985). Using information supplied by seven of the large engineering companies, Nadar was able to collect data from a sample of small units actively involved in subcontracting. What Nadar's results showed was that technical co-operation was of a very limited and rudimentary nature. Large firms usually provided technical drawings and samples, but beyond that there was little positive help. Three out of 45 small units reported receiving some assistance in buying second-hand (and presumably therefore old) machinery at concessional rates; while eighteen had received a visit from a parent company engineer (Nadar 1985: 80/81). Asked about the quality of the technical assistance received, six reported receiving no assistance, a further thirty replied that they had been provided with some 'but not enough'; only 9 units reported receiving plenty of technical help (Nadar, 1985: 141). It would seem then, that while bemoaning poor quality and high reject rates, large firms are remarkably unwilling to adopt a proactive approach to helping small units overcome their deficiencies.

The provision of technical assistance is one of the functions of the District Industries Centre, and the state-run Small Industries Development Corporation. In practice, as noted already, their ability to discharge that responsibility effectively is limited by the shortage of staff, the lack of access to up-to-date technical intelligence, and the lack of opportunities for professional development. A basic problem is that the DIC and the SIDCO are expected to be able to provide often detailed technical advice and assistance to the whole range of industries. As the number and scope of small industries has expanded in recent decades, the range of technical expertise has also increased beyond the capabilities of a single Deputy Director. By contrast, as we saw earlier, Italian industrial districts have evolved a network of specialised centres, catering to the needs and requirements of the particular branches of industry in particular localities. Specialised clusters

are matched by specialised advice centres, whereas in India, the DICs remain jacks of all trades.

The one technical service provided by government that seems to function adequately is the Regional Testing Laboratory. Run by the Small Industries Service Institute, this provides facilities to test the composition of raw materials, and of finished products and components. Relatively few units in Ganapathi used this facility (9 of 91), partly because the facility is inconveniently located on the southern edge of the metropolitan area on the SIDCO Industrial Estate. Typical of many government institutions, the Laboratory strives to provide a service to industry with obsolete equipment. It is rapidly being overshadowed by a new venture promoted by CODISSIA and the South India Engineering Manufacturers Association. The Small Industries Testing and Research Centre (SITARC) was set up in 1988 with financial support from the Industrial Development Bank of India as a non-profit making body. It provides modern testing facilities, but it has ambitions to go beyond that limited role and undertake product research and development as part of a strategy to raise quality of production in small industry. As noted earlier, relatively few small units pay much heed to formal quality standards even where they exist, preferring to use their own designs and set their own standards, which too often tend to be low. An estimated 75% of pumpsets manufactured in Coimbatore fail to meet the standards laid down by the Bureau of Indian Standards, having an efficiency of only about 55%. Moreover, the problems of servicing and repairing non-standard equipment militates against successful marketing of small firms' products. SITARC's role is to encourage wider adherence to agreed standards in the belief that with the trend towards liberalisation in the economy generally, small units cannot afford to remain complacent about quality. Research is under way into developing new fuel efficient designs for pumpsets and these are being distributed to manufacturers for a nominal fee. While it seems to be the larger small manufacturers who have

shown greatest interest in this programme so far, as standards are raised through better designs there will be growing pressure on the smaller units to follow suit.

There are several other encouraging examples of product development work being undertaken in Coimbatore. The Product Development Centre within the PSG College of Technology works closely with local industry to develop appropriate machinery. Alongside projects concerned with hi-tech CNC machine tools and industrial robots, an important project has been the design and manufacture of a heavy duty lathe suitable for use by small firms. Now in commercial production, the fact remains that many small units are unable to afford the cost of new equipment, and continue to use obsolete and inefficient second-hand museum pieces. Postgraduate students in the Department of Agricultural Processing at the Agricultural University have also worked closely with farmers and with local small engineering units to develop a range of relatively simple agricultural aids for sorting, cleaning and grading agricultural produce, while a further collaborative project with local small industry concerns the application of alternative energy sources in agriculture. At the instigation of small manufacturers, research has been undertaken into the merits of alternative materials for the production of biogas holders.

A further institutional source of new product technology has been the South India Textile Research Association (SITRA). Financed partly by the Government of India, and by major textile producers in India, the Middle East and East Africa, this industry association provides training courses for managers and executives, offers general economic intelligence and advice, as well as more specialised advisory services in labour relations, financial management, and so on. Additionally, it conducts engineering and instrumentation research of relevance to the industry. Arising from this, SITRA has developed a range of specialised machines and quality control instruments. Of the eight major pieces of equipment

developed at SITRA, seven are now in commercial production. A two-for-one doubling machine is now in large scale production under licence by Lakshmi Engineering in Coimbatore, while the remaining six machines, for which demand is more limited, are produced locally by small scale units under supervision by SITRA. The Deputy Director, Dr Kalyanaraman, emphasised that regular checking of production standards among small units was essential to protect SITRA's good name and the performance guarantee that it offers customers. Implicit in this is the familiar criticism that small manufacturers do not pay sufficient attention to quality standards.

This chapter has attempted to define the major problems facing small engineering units in present-day Coimbatore, and to assess the extent to which those problems are being addressed. Small units are confronted with the interconnected problems of low levels of technological development, limited supply of trained labour, poor quality, poor marketing networks and inadequate credit facilities. Government agencies have not been in a position to address these issues satisfactorily. The government's small industry policy has tended to emphasise financial concessions, notably excise duty exemption, as a principal means of encouraging a healthy and growing small scale sector. While such concessions may have had some impact on the overall growth in the number of small units, they ill serve the aim of encouraging dynamic and self-sustaining growth. The failure of state agencies to provide effective support to small industry has, but only to a limited extent, encouraged the growth of self help. While CODISSIA seems to be an energetic organisation which has pursued a number of important initiatives, its membership is limited to the more dynamic and already more successful firms. What is remarkable is that there is very little evidence of other forms of collective action by the generality of small enginering units. The kinds of reciprocal cooperation which are seen to be the hallmark of the industrial network, are absent. There is no evidence of the existence of credit unions, of joint marketing organisations, or

of collective attempts to improve the supply of trained workers. In the next chapter, we shall attempt to explain the limited development of cooperation and collaboration.

CHAPTER 11. SUMMARY AND CONCLUSION

The broad aim of this dissertation has been to examine the Government of India's policy for small scale industry, and in particular to evaluate the role of the policy in relation to the growth of the small scale sector, its geographical distribution and its viability. It was undertaken on the basis that these issues have not received the attention they deserve.

1. The growth of the small scale sector

A major aim behind the government's promotion of small manufacturing industry rested on the belief that small manufacturing is labour intensive, so its promotion would greatly aid the generation of much-needed employment and contribute to the absorption of labour. Analysis of available data on the small scale sector suggests that there has been substantial growth of employment (Chapter 4). Over the period 1961 to 1991, employment by small manufacturing enterprises with 10 or fewer workers grew from 4.5 million to 13.5 million. Extending the definition of small to include enterprises with 49 or fewer workers suggests that total employment increased from 5 million in 1961 to 15 million in 1991. Successive governments claim this impressive achievement as a vindication of the policy, one of whose major aims was to promote the growth of the sector as a means of absorbing 'surplus' labour. However, this achievement needs to be seen in the context of the rapid growth of both the total and the working population. Over the same period, the total population doubled, and the number of men in the age group 15-59 increased by 65 million between 1961 and 1981. In that context, the increase of 10 million jobs in the small scale sector is a relatively modest achievement. Moreover, as argued in Chapter 6, there is some doubt about what contribution the government's policy has actually made to that achievement. The major elements of the policy were already well established by 1960, and subsequent changes were largely marginal. Against the background of a relatively

stable policy framework, the growth of the small scale sector has been very uneven over time. Measured by employment, the small scale sector as a whole grew more rapidly in both relative and absolute terms over the 1970s compared with more modest growth in the 1980s. This pattern of growth is at odds with the general evolution of the economy generally, which tended to stagnate in the 1970s, and registered much more buoyant growth in the 1980s. A disaggregation of the small scale sector suggest that it was those branches of small industry related to the rural and agricultural economy that grew most rapidly in the 1970s, while the metals and engineering branches grew relatively slowly, presumably reflecting the slower growth of the industrial economy over that period. By contrast there is some evidence that the latter grew more rapidly in the 1980s as the industrial economy expanded. While the limited data do not allow any firm conclusions to be drawn, it does appear that the growth of the small scale sector has been more strongly conditioned by the development of the economy generally than by the specific government policies towards the small scale sector. If the small industry policy has had an influence, it may well have been perverse. There is some evidence that the slowdown in employment growth in the 1980s may be explained by greater capital intensity, a trend which may itself have been encouraged inadvertently by government policy. One of the remarkable features of that policy is that the government has made cheap credit available for small entrepreneurs to purchase plant and machinery, but there has been no attempt to tie the provision of credit to the creation of employment. The result of that lacuna may well have been to encourage greater capital intensity at the expense of employment creation.

2. Regional balance

A second aim behind the small industry policy was founded on the belief that promoting the growth of the small scale sector would help to alleviate geographical imbalances in the economy. It has been asserted by successive

governments that the policy would help to overcome inter-regional and intra-regional disparities, by creating employment opportunities in 'backward' areas and states , and in rural areas. The theoretical and empirical basis for such arguments is very weak (Chapter 7). Analysis of data for the major states shows that in both 1961 and 1981, there is a strong and positive relationship between employment in the small scale sector, and levels of urbanisation; indeed the relationship became stronger over that period. Far from alleviating regional disparities, there seems to have been a process of increasing concentration in the more developed and urbanised states, notably Maharashtra, West Bengal, Tamil Nadu, and Haryana/Punjab whose share of total employment in the small scale manufacturing sector increased over the period 1961-1981. What this seems to reflect is a process of agglomeration, in which small firms proliferate in major urban centres which afford significant external economies to small firms. At a smaller scale, analysis of District-level data for the state of Tamil Nadu demonstrated a similar clear relationship between the level of small industry employment and level of urbanisation. Between 1961 and 1981, four districts gained more than half the increase in employment, and those Districts included two of the major urbanised areas, Madras/Chingleput, and Coimbatore. While there was some evidence for an increase in employment in rural areas, there is little support for the notion that promoting small scale industry will contribute to rural development. Indeed, it is much more likely that rural industrialisation is a consequence rather than a stimulus to rural development. Overall, the conclusion to be drawn from this analysis is that the claim that promoting small scale industry will lead to a more balanced spatial economy is at best misleading, based more on wishful thinking than on a realistic assessment of the prospects.

3. A self-sufficient and viable small scale sector

The third, though less noticed aim of the small industry policy was to create a self-sufficient and viable small scale manufacturing sector. In attempting to

evaluate how far that has been achieved, use has been made of the recent literature on industrial districts and industrial networks, discussed in Chapter 2. This body of work suggests that successful and dynamic small scale industrialisation depends in part on the geographical agglomeration of small firms; and secondly, and more crucially, on the creation of strong bonds of cooperation. The existence of strong collaborative relationships distinguishes the industrial networks of both Emilia Romagna and Japan from 'simple' geographical agglomerations of firms, and that difference in turn translates into the difference between dynamic growth in the former case, and stagnation in the latter. The principal characteristics of the Emilian model of the industrial district are:

* a geographical concentration of small and medium enterprises which exhibit specialisation by product or process
* linkages between enterprises based on both market and non-market exchanges of goods and information
* a well developed informal system of cooperation between enterprises as shown by the existence of credit unions, joint buying and marketing organisations, and producers associations
* a network of public and private agencies which provide support for small enterprises

The Japanese form of the industrial network is characterised by:

* a geographical concentration of small and medium enterprises which exhibit specialisation by process or product
* linkages which are predominantly with large firms, based on quasi-permanent, non-market exchange
* a high level of cooperation between small /medium enterprises and large firms, based on the reciprocal exchange of goods, information and personnel.

Chapters 8-10 attempts to assess whether the agglomeration of small engineering firms in the city of Coimbatore represents an industrial network of either the Emilian or Japanese type - or indeed a composite of the two. In particular, the case study sought to examine the role of public policy in creating a self-sustaining process of small scale industrialisation. Arguably, an effective policy of support for small firms can provide a stimulus to cooperative partnerships by acting as a concrete example of what a cooperative partnership can achieve. As a model of cooperative effort, public policy might then encourage further cooperative partnerships between small firms and other public and private agencies, including firms in the large scale sector; and between small firms themselves. In this way, the government's policy towards small firms operating through its local support agencies can act as a catalyst, helping to create a successful and dynamic small firm sector.

In their account of state intervention in Chile, Humphrey and Schmitz suggest that successful promotion of networking depends on (Humphrey and Schmitz 1996: 1863-1865)

- delivering high quality services which directly address the needs of small firms
- improving the take-up of services by working closely with small firms
- coordinating with other service providers in the public and private sector, such as banks, training institutes, suppliers
- promoting cooperation among small firms through encouraging group activities

Judged on those criteria, the support services provided by the Government of India through the District Industries Centre and the Small Industries Service Institute in Coimbatore are deficient. As shown in Chapter 10, the support services, although impressive on paper, suffer from a variety of shortcomings:

- the quality of the services provided is poor, particularly in respect of marketing and technical information, and this is related to the limited resources and the lack of skilled personnel with a sufficient knowledge of the range of local industries

- the take up of services among the sample of engineering units was very low; only one in five units had made use of the DIC's services, and one in seven had used the services provided by SISI.

- while the DIC does coordinate with banks and the state financial institutions, there is little coordination with other public and private service providers such as educational and training institutions, suppliers, or local large firms

- a proactive approach to supporting local small firms through extension visits does not appear to be programmed into the work of government agencies.

In sum, the results from a sample of small engineering firms in Coimbatore, broadly confirmed by the NCAER's larger study of small firms in seventeen Indian cities, indicate that the government's support system has not been at all successful in helping small firms to overcome their problems and difficulties (NCAER, 1993). At root, the support system seems to suffer two fatal handicaps, namely the lack of resources and the national system of priorities laid down for the local DICs in particular. National policy of having an Industries Centre in every District means that resources are spread very thinly across the whole country, and the effectiveness of the DICs, with their responsibilities for providing support to the range of small firms and village industries, is thereby severely limited. At the same time, that problem is compounded by a system of priorities for the DICs which emphasise the encouragement and registration of new firms and self-employment at the expense of support to already established firms.

If state action to provide effective and useful support to small firms has failed, there are promising examples of other forms of informal collective action in Coimbatore. Apart from its role as a pressure group, CODISSIA has developed a range of support services for its members. Among its more important

achievements is a trade fair which acts both to promote demand for the products of local firms and provides an opportunity to acquire information about appropriate new technologies; while the setting up of the Small Industries Testing and Research Centre is an attempt to improve quality and reliability and so enhance the demand for small firm's products. A further important agency is the PSG Trust, whose educational work, supported by its income from its own production facilities, provides a training ground for small entrepreneurs, and makes its technical facilities available to small entrepreneurs. The PSG Polytechnic and the College of Technology provide much better facilities for their students, and for the local industrial community, and there is a more determined effort to build collaborative links with local industry and with CODISSIA than is evident among the state-run educational institutions.

There are then, in Coimbatore, some promising local experiments in collective and collaborative action, but their impact seems to be limited to relatively few small firms. Among the sample of small engineering firms, just over a third were members of CODISSIA, and none of the firms in the sample had taken advantage of the technical support facilities offered by the PSG Trust.

In terms of the characteristics of the Japanese and Italian industrial networks, we can say that some of the elements of those models are to be found among the sample of small engineering units in Coimbatore:

- there is a concentration of small units which specialise in producing particular parts or in particular processes
- there is a pattern of tight local linkages between enterprises, and with local suppliers and traders
- there are also linkages between some small firms, producing either components or finished goods, and local large firms.

- there is also evidence of growth and accumulation, with a third of the sample investing in additional plant and machinery, and just over half increasing their labour force

- there is evidence too of flexibility of production, with a third of the units changing their output, towards items in demand from an emerging middle class, such as wet grinders and washing machines

There is in other words a degree of dynamism among the sample of small firms in Coimbatore - but that dynamism coexists with technological stagnation, lack of innovation in production methods and generally poor quality standards. In an important respect, Coimbatore's small scale engineering units stand in marked contrast to Italian and Japanese industrial networks, where technical innovation and high quality production are deemed to be essential elements in creating a viable and competitive small firm economy. More fundamentally, what appears to be lacking in Coimbatore is the cooperative ethos which is seen as the hallmark of both Italian and Japanese industrial networks. There seems to be little in the way of widespread cooperative effort or collective involvement. Indeed, among the generality of small engineering firms, the most remarkable feature is their continuing isolation. Neither public policy, nor the repeated interaction between firms within a relatively small area seem to have been able to overcome that particular problem, nor has spontaneous collective effort prevailed. While evidence of cooperation is limited, there is plentiful evidence of a basic lack of trust among small firms and those they deal with. Among the more important indicators of this are:

- the lack of an informal cooperative system as evidenced by the absence of credit unions, joint buying and marketing organisations

- no evidence of forms of mutual help, such as the sharing of machinery and orders among small firms
- the reluctance of large firms to subcontract because of their lack of confidence in the technical competence and skills of small firms

- SITRA's insistence on monitoring the performance and output of small firms who take up production of their machinery

- consumers' preferences for large firm's branded products, reflecting a lack of confidence in the quality and reliability of small firms
- lack of trust within small firms, as shown by the way that most entrepreneurs feel it necessary to supervise production themselves
- suspicion of government and bureaucracy[1]

What this amounts to is that there is widespread suspicion, lack of confidence and mistrust among small entrepreneurs in Coimbatore. This mistrust is not of course absolute: we have already referred to involvement with CODISSIA but an interesting feature of that, apart from including a minority of small firms, is that CODISSIA's membership tends to be drawn from the larger small firms and from entrepreneurs with a higher level of educational attainment. Conversely, it is the small and tiny units which are least likely to be involved in collective efforts, and that may arise because the risks involved in cooperating with others are that much greater for small units with very slender resources to fall back on. Survival might therefore encourage a very conservative, and risk averse attitude, while larger and more well-established firms with a better resource base can afford to take risks by cooperating with others. While such an explanation may carry some weight, it is by no means the only explanation for the generally low level of trust and social solidarity that prevails among small firms. Holmstrom has suggested that, as in Japan and Italy, cultural factors may play a significant role. He notes that:

> "In the past, at least, many Indian entrepreneurs .. have been notoriously suspicious of anyone outside (and sometimes inside) their own family, caste or religious community, and unwilling to share information" (Holmstrom 1993: M-85).

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[1] That there is such suspicion was evident in undertaking the survey in which this study was based. Many small entrepreneurs required some assurance that the information would not be divulged to 'the government' before agreeing to participate.

Chapter 8 discussed the relevance of caste as a factor in developing business relationships. That is, entrepreneurs, traders, and suppliers who share a common caste background may find it easier to trust each other and so may be more likely to collaborate than where people are drawn from different caste communities. Arguably, the greater the diversity of caste backgrounds, the greater the difficulty in creating relationships of trust. And certainly in the sample units in Coimbatore, there is diversity of caste community. Altogether ten different caste groups were represented, though two-thirds of the entrepreneurs for whom information was available belonged to the Gounder and Naidu communities. While caste may have some influence in business matters, just how much of an influence it wields is not at all clear. Caste as such appears throughout the analysis undertaken here to have little systematic relationship with other factors; there is no relationship between caste and whether firms have grown or not, nor with membership of CODISSIA, nor do mainly Naidu-owned large firms show caste preference in subcontracting work. As Holmstrom has recently remarked

> "..it does not seem that membership of the same caste or religion or language group is automatically a foundation for trust, or that entrepreneurs will subcontract work to or share information with someone simply for this reason" (Holmstrom 1997 L-13).

If caste and caste exclusiveness are not the key to understanding the low level of trust to be found among small entrepreneurs, then an alternative explanation might lie in strong familism. Béteille has noted that accounts of Indian society and culture tend to be preoccupied with caste, to the exclusion of a consideration of the significance of the family (Béteille 1992). He argues that, in urban India particularly, the commitment to caste is in decline, while "the moral commitment of most Indians to the family remains very strong, and may perhaps be growing stronger" (Béteille 1992: 17). Business, and indeed politics, is often a family affair. Most of India's top private companies are family-based organisations (Piramal and Herdeck, 1986), as are many of the larger firms in Coimbatore, and

even among the small firms in our sample engineering units, partnerships are invariably kin-based. It is the family to which most people feel a strong sense of moral obligation, so that trust tends to be exclusive to kin members, and is not readily extended to non-kin. As in Italy and in Japan, socio-cultural habits and values do play an influential role over forms of economic organisation, but compared with the high levels of social solidarity and trust found in the Third Italy and Japan and which underlie inter-firm cooperation, in Coimbatore there is evidence of lack of trust and limited social solidarity which has inhibited cooperation and collaboration. A minority of small firms appears to have been able to embark on forms of collective and collaborative action through CODISSIA, implying that socio-cultural values are far from determining. But the generality of small firms remain relatively isolated units within a geographical agglomeration.

The broad conclusion to be drawn from this study is that the small scale industry policy that has operated in India for the last four decades has been of questionable value. Based as it was on highly dubious assumptions about labour intensity and the suitability of small industry for dispersal into backward and rural areas, the policy has been wasteful of public funds as evidenced by underused industrial estates and indiscriminate subsidies. The failure to tie financial assistance to employment creation is one of the more glaring instances of the counterproductive nature of policy. In addition, the government's support services for small firms have fallen far short of providing useful and effective help to small firms, so that policy has not contributed, at least in Coimbatore[2], to creating a self-sustaining and dynamic process of small scale industrialisation. That failure is compounded by the evident lack of trust and the mutual suspicion with which small entrepreneurs regard each other.

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[2] And on the basis of the NCAER study, this seems to apply more generally across India (NCAER, 1993

On a more general level, promoting small scale industries is not a panacea that will solve all the problems of Third World countries, but it can make a contribution to the urgent need to create employment opportunities and to raising living standards, and the literature on industrial districts offers insights into the basis of a programme of sustainable small scale industrialisation. But that literature has limitations.

Firstly, it tends to be preoccupied with the local, at the expense of considering how the local is conditioned by national policies. As Gertler suggests, studies of developed country industrial agglomerations have been characterised by "excessive localism" (Gertler 1992:274). Such studies rarely consider how national economic policy, or national educational and training systems impinge on the development and functioning of local agglomerations. In the case of India, the view that national policies are unimportant to the functioning of the small scale sector is untenable. For the past four decades, India has pursued an inward-looking strategy of development which has insulated and protected Indian industry in general from international competition. The creation of a protected market has, on the credit side, been a significant factor in the growth of the small scale sector, but, on the debit side, it has contributed to the lack of technological dynamism and poor quality standards of industry. At the same time, national and state educational and training policies have tended to sacrifice mass education in general, and technical education in particular, in the interests of expanding opportunities for an élite, with the result that there are both shortages of skilled labour, and especially of trained labour, as a significant proportion of firms in Coimbatore reported, and this too contributes to low productivity and poor standards of production. National policies, then, create the environment in which small firms in cities like Coimbatore operate. The industrial district literature tends to avoid discussion of such macro-issues, in favour of examining the local

response of small firms, and how small firms can collectively attempt to overcome the difficulties they face - or not, as in the case of Coimbatore. The point to emphasise here, is that national policies and priorities have been and continue to be extremely influential in determining the development and the major characteristics of the small firm sector, and far more so than the small industry policy.

Secondly, the literature has afforded only very generalised insights into how agglomerations of small firms, such as that in Coimbatore, can be transformed into successful industrial networks. The dominant model emphasises the importance of trust, cooperation, and of locally accountable support systems geared to the particular needs and requirements of local industry. What the model has generally failed to do, is to provide answers to the question of whether an agglomeration of small firms can be successfully transformed into an industrial network and if so, how. Indeed some commentators seem to deny that such a transformation can be effected at all, because of the way that industrial networks are embedded within particular (local or national) social structures that encourage the habits and practices of trust and cooperation. That being so, "the particular local characteristics of various success stories (which) cannot be transferred to other places" (Hadjimichalis and Papamichos 1990: 182) This emphasis on the unique experience of particular localities contrasts with the greater optimism about the replicability of the industrial network shown in the recent work of Humphrey and Schmitz (Humphrey and Schmitz 1996). They provide some limited support for the contrary view, that public policy can be effective in encouraging closer inter-firm cooperation, even where the initial conditions of mistrust and suspicion are unfavourable. Indeed, arguably it is precisely when low levels of trust have deterred spontaneous cooperation that there is the greatest need for skilful intervention.

For public policy to be effective in this regard, Humphrey and Schmitz indicate that policy must be proactive, locally focused on small groups of firms, and based around personnel with advanced technical and coordinating skills (Humphrey and Schmitz 1996: 1870-1872). Their findings do seem to have important implications for the design of small industry policies. What they seem to imply is that promoting successful and self-sustaining small industries is not to be achieved simply through tax breaks, cheap credit and industrial estates, which tend to be the common denominator of most government policies. Policies need to be sensitive above all to the objective of building co-operation between individual enterprises. Government support should be viewed not as an end in itself, but primarily as a means to encouraging (closer) networking, and this is best done where agencies work together with small firms at the local level, establishing themselves as credible agencies and able to demonstrate the benefits of cooperation. As far as India is concerned, such an approach would require a very considerable redesign of the small industry policy, both in terms of its aims and its organisation. In particular, the current policy has, as argued above, had little impact on the overall growth of the small industry sector, while the aim of using the small industry sector to promote regional balance is essentially misguided. The third aim of the original policy - that of creating a viable and self-supporting sector - has largely been ignored, but is precisely the goal that, in an era of liberalisation, requires much greater emphasis, and with it a rethinking of policy and priorities.

The inability of DICs in India to provide effective support to small firms arises from the blanket policy of locating an Industries Centre in every District, with the inevitable result that resources are spread thinly across the whole country, and individual DICs are unable to offer the quality of services that would make them useful and credible agencies. And that problem is compounded by the diversity of responsibilities - for the whole range of small scale industries, as well as village

and handicraft industries - placed on the DICs, and by the tendency to focus on new start-ups, rather than aiding established firms. Improving the effectiveness of the government's support services, and of the small industry policy, would seem to require a shift away from a centralised and universalistic policy, towards one that recognises the fact of geographical agglomeration, encourages greater geographical selectivity, so that more resources can be concentrated on those localities with sectoral agglomerations of small firms, and directs those resources more clearly towards supporting firms in a more proactive fashion. Such changes in national policies and priorities (including education and training policies) may go some way towards improving the effectiveness and credibility of public policy, but it leaves unresolved the question of how and by whom such changes are to be brought about. The small industry policy has been in place in India for some four decades, and redesigning the policy will come up against bureaucratic inertia and political opposition. As Drèze and Sen remark, India may be characterised as suffering from too much government interference in economic matters, but that criticism should not mask the reality that there is also

> "... insufficient and ineffective government activity in many fields.. This inertia contributes to the persistence of widespread deprivation, economic stagnation and social inequality" (Drèze and Sen 1995 : 203).

The real difficulty is precisely that of how to improve the effectiveness of government, to overcome the bureaucratic inertia and the political (and in the case of educational reform, class-based) opposition to change so that services are delivered in a more effective and focused manner. The literature on industrial districts ignores such issues, and assumes that there is a functioning local/regional system of government capable, perhaps with minor modifications, of delivering services. Such an assumption is unwarranted as far as many countries in the Third World are concerned. Drèze and Sen suggest that improving the effectiveness of government in India will come about only as a result of popular pressure (Drèze

and Sen 1995: chapter 8). But as far as small industry is concerned, there is a clear dilemma in that while more effective and decentralised government may help to encourage greater cooperation, and thus contribute to a more dynamic and self-sustaining process of small scale industrialisation, the largely isolated and disorganised small scale sector lacks the means of exerting organised political pressure to bring about those changes. And change does seem to be all the more necessary in the new context of a liberalising economy, which, albeit haltingly, is exposing small firms in India to growing international competition.

To date, the small industry policy has not been noticeably successful in meeting the aims set for it. Both the financial and opportunity costs of continuing with it in its present form are high. The literature on industrial networks is beginning to indicate how public policy can help to create a viable and self-sustaining small firm sector, and India could well learn from that literature. Slavish imitation may be a bad thing, but there is always room to learn from others, a process which might give India's small scale industry policy a much needed new focus and a new sense of purpose and direction.

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APPENDIX 1

Interview Schedule

1. What is the name of the owner of this unit?
2. Address
3. Is this unit owned
   - by a single proprietor
   - a partnership
   - a cooperative
   - private company

4. Is this unit registered
   - with the Factory Inspectorate
   - as a small scale industry with the District Industries Centre
   - not registered at all

5. Was this unit established , bought or inherited by the present owner(s)?
   - Established Date
   - Acquired Date
   - Inherited Date

6. Do you own any other units? Where?

7. If established by the present owner, why did you locate the unit here?
   - Founder lives here
   - Nearness to large units
   - Other small units in the locality
   - Other factors

8. Before founding/taking over this unit, was the owner
   - Previously employed
   - Self employed
   - Unemployed
   - At school/college

9. What educational qualifications does the owner have?
   - Secondary School leaving certificate
   - Industrial Training Institute certificate
   - Degree/diploma
   - None

10. How many people regularly work in this unit ?

11. How many people occasionally work in this unit ?

12. How many of the people working here are members of the owner's family?

13. How many of the people working here are
    - skilled workers
    - unskilled
    - trainees

14. Since starting this unit, has the number of people working here
    - increased
    - decreased
    - stayed the same

15. How many of the people working in this unit have
    Secondary School leaving cerificate
    Industrial Training Institute certificate
    Degree/diploma
    None of the above

16. Where do the people working in this unit live (district/village name)?

17. Please describe what you produce in this unit

18. What did you produce when you originally started this unit?

19. Does the owner of the unit take part in making these products? Yes/ No

20. What raw materials do you use in this unit?

21. Who supplies you with those raw materials? Name of supplier Location of supplier

22. What machinery did you have when you first started up in this unit ?
    Machinery with power Machinery without power

23. What machines do you use here now?
    Machinery with power Machinery without power

24. What do you estimate is the value of the tools and machinery you use?

25. What do you estimate is the value of sales in the last month?

26. Do you produce your own designs for your products
    designs supplied by others

27. Have you changed your designs since starting this unit? Yes/No

28. Who are your main customers? Are they mainly
    other small manufacturing units
    large units
    Merchants/traders
    open market

29. What proportion of your business is conducted
    locally, within Coimbatore
    within Tamilnadu, but outside Coimbatore
    outside Tamilnadu

30. Do you have customers that you regularly work for? Yes/No Location

31. Do you have any contact with large units? Yes/No

    If YES what is the location of the unit(s)

    Do large units supply you with
    - raw materials
    - job work
    - product design and development
    - market research
    - financial assistance

32. Have you borrowed money

From relatives/friends
from a money lender
from a bank
from government agency

33. For what reasons have you borrowed money?

34. Do you have any contact with

Chamber of Commerce	Yes/No
Small Scale Industries Association	Yes/No
Productivity Council	Yes/No
Engineering Manufacturers Asociation	Yes/No
Institute of Engineers	Yes/No

35. Would you say that as far as your business is concerned, such contacts are

very important important not important

36. Have you had contact with

Small Industries Service Institute	Yes/No
SIDCO - the State Industries Development Corp	Yes/No
District Industries Centre	Yes/No

If YES, what was the purpose of your contact?

Would you say that these organisations are
a very useful source of help
a useful source of help
not at all useful

What are the main problems facing your business ?

What other problems do you face?